The Canadian
Medical Association Journal

Vol. XXI TORONTO, OCTOBER, 1929 No. 4

DR. A. D. BLACKADER AND THE JOURNAL

WE are pleased to be able to present our readers, in this issue, with a portrait of Dr. Blackader, who has lately retired from the Editorship of the *Canadian Medical Association Journal*. The portrait is reproduced from an oil painting which hangs on the walls of the University Club of Montreal, by the well known artist, M. Alphonse Jongers, and will be recognized as an excellent likeness.

The Canadian Medical Association and its *Journal* owe much to Dr. Blackader. This obligation was appropriately and gracefully acknowledged last June, when it was announced that the Association had decided to establish a Blackader Lectureship in Pædiatrics. The *Journal* itself is a standing memorial also to his zeal and ability.

Medical journalism began in Canada about one hundred years ago, in the City of Quebec, and for many years maintained a precarious existence. Our *Journal* may be said, with considerable justice, to have derived its origin from *The Canadian Medical and Surgical Journal* which first appeared in 1872, under the editorship of Drs. Fenwick and Campbell. This periodical continued until 1888, when its name was changed to *The Montreal Medical Journal* and it came under the management of Drs. Ross, Roddick, and Stewart.

At the Annual Meeting of the Association at Toronto, in June, 1910, it was decided to establish an official journal "as a medium for the expression of all that is best in Canadian Medicine. For practitioners of general medicine, or in any special department of it; for workers in the laboratory or the hospital, a vehicle is offered which goes wide afield for the conveyance of fresh information, free comment, and sound opinion. . . . . .

"It will be its aim to offer adequate means of publication, within the country, of material, some of which, at least, has hitherto been brought to the notice of the profession in English and foreign journals. If Canadian thought upon Medicine is to make that impression upon the world which its importance warrants, it must be concentrated in one channel. What that channel shall be remains for the thinkers themselves to decide." Sound ideas these.

The new magazine, *The Canadian Medical Association Journal*, appeared on January 1st, 1911, under the editorship of Dr. (later Sir Andrew) Macphail. An editorial in the first issue was at once a hope and a propheey. "A Canadian type of nationality and a Canadian type of disease are in process of formation, and Canadian physicians are quietly and surely laying the foundations for a Canadian Medicine of the future. The Canadian Medical Association and its journal, by enlisting the sympathy, support, and co-operation of men from all parts of the Dominion, will help to lay this foundation broad and deep, and will do much to banish sectionalism and provincialism." The new Journal was formed by the amalgamation of the *Montreal Medical Journal* and the *Maritime Medical News*, the latter discontinuing publication at the end of 1911.

The course of the new journal was beset with difficulties from the first, chief of these being those resulting from the war. While the Editor, Sir Andrew Macphail, was away on active service the *Journal* was capably administered by Drs. Maude Abbott and Gordon Campbell. After the war Sir Andrew resigned and an Editorial Board was constituted, with Dr. A. D. Blackader as Chairman. This was in 1919. Difficulties with the publishers, which had become acute, were overcome by the purchase of their rights toward the end of the same year. Henceforth, the road was smoother. How the *Journal* has progressed under Dr. Blackader all are aware. The *Journal* took on a new lease of life after the historic meeting in Halifax in 1921, when the finances of the Association assumed a more promising aspect. This was the turning point, and the Association and its official organ have never looked back. The *Journal* was considerably enlarged in 1924, and by 1925 had doubled the number of its reading pages and increased their size. In 1926 it was so large that it had to be divided into two half yearly volumes. The ideals with which the *Journal* started have been well maintained, and none can fail to appreciate its steady growth throughout past years. Dr. Blackader's name is writ large not only on the pages of our *Journal* but in the history of medical journalism on this continent. A.G.N.

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An Address

ON

THE DUTY OF THE DOCTOR TO THE HOSPITAL*

BY H. H. MURPHY, M.D.,

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IN his history of the English people, John Richard Green states that James I—"the wisest fool in christendom"—was the originator of the theory of the Divine Right of Kings. In one of his famous addresses to the Star Chamber, James briefly stated the doctrine as follows:

"As it is atheism and blasphemy to dispute what God can do, so it is presumption and high contempt in a subject to dispute what a king can do, or to say that a King cannot do this or that." The church quickly approved of such a reasonable doctrine, and Oxford University soon followed suit.

Everyone knows the outcome of that struggle to determine whether civil power and authority was a divine gift at birth or was vested in the common people. But, just as we occasionally see a gill slit persisting in the human organism, recalling to mind our own past physical history, so we sometimes find, even in this age of democracy, groups who seem to claim the Sovereign Right Divine in their relationship with mankind at large. I would ask you to consider with me this afternoon the question of the doctor's duty to the hospital as impartially as we can, pausing now and then to consider if in our hospital work our viewpoint is ever that of James I.

It is recognized by every one that every hospital has one main function—to adequately care for the sick—and we realize that any hospital is founded on a rock which returns to health the largest possible percentage of its patients in the shortest possible time. This, of course, implies that every medical man occupying a position on a hospital staff must be qualified for the work he essays, and must keep abreast of the steady progress in medicine. It requires that every hospital practitioner must continue to be a student as well as a practitioner. Just here I wish to to acknowledge the indebtedness of the medical profession of Canada to the Sun Life Assurance Co., to the Canadian Medical Association, and to Dr. Geo. Young, of Toronto, in providing a system of nation wide post-graduate medical addresses and lectures. In this matter we are engaged in pioneer work and the eyes of the whole medical world are following this daring, and, so-far, gloriously successful innovation.

Besides the main purpose of our hospitals to adequately care for the sick, some hospitals have other important functions. These are: (1) the training of physicians and nurses, (2) the health education of the community, (3) the advancement of medical knowledge.

To accomplish their main function—the adequate care of the sick—our hospitals, closed and open, are shouldering a steadily increasing financial burden, and there are those who think that in this matter of expense our profession has inherited somewhat of the viewpoint of James I, that as sovereign lords we are demanding an ever increasing hospital expenditure without much thought or consideration as to where the money is coming from, and with perhaps too kingly a disregard for economy in its expenditure.

When a hospital is built as a result of a private bequest, there is usually sufficient trained supervision of plans and construction that gross technical errors are avoided. But, when a community undertakes to provide such an institution, and the architect chosen is perhaps designing his first hospital, the results are not always so happy. We find waste space in corridors, doors through which hospital beds cannot be wheeled, kitchens so remote that it is impossible to serve meals warm without great expenditure for special containers and carriages—in short, hospitals that are designed without any thought for saving time and energy in the actual nursing care of the sick. These things you have all seen. In the majority of cases, the medical profession, supposed to be interested, have been consulted,

* Read at the Sixtieth Annual Meeting of the Canadian Medical Association, Montreal, June, 1929.

but through lack of special training, perhaps even through lack of interest, our profession, as a whole, has not given the help to lay boards in these matters that it was reasonable to expect. An ill designed and cheaply constructed hospital will function poorly and expensively throughout its life. I believe that through the hospital department of the Canadian Medical Association, under Dr. Harvey Agnew, we will find the help and trained knowledge and accumulated experience which will remove this reproach from amongst us. I believe that such a department will prevent not only errors of the type I have mentioned, but will also act as a brake on those hospitals' ambitions which sometimes lose sight of the primary object—the care of the sick—in the materialization of the finest, best, and most expensive building of its kind yet undertaken in the community.

Having built our hospital, have we as a profession any further responsibility to it beyond the skilful, energetic, and sympathetic care of our patients? I believe we have. We must develop what Dr. Joseph C. Doane, of the Philadelphia General Hospital, calls "hospital mindedness."

We all, I think, at one time or another complain of the extravagance of the professional nurse. And, yet, where has she developed her habits of prodigality? From you and from me, since she has graduated from our hospitals. The carelessness of the attending staff with catgut and dressings, gauze and glass syringes, and biological products, is translated in every hospital into a debit entry of thousands of dollars every year. Nay more, its effect on the morale of a training school for nurses and a post-graduate school for young physicians is incalculable. "There's such divinity doth hedge a king." "Hospital mindedness" means the same thought, the same care and thrift in the use of hospital supplies as each one of us show in his own office. If leniency is to be shown to any, it is to those who are giving lavishly of their time in the charity wards, where they may perhaps sacrifice material to save time, but these men would probably consider such a dispensation as more of an insult than a privilege, for it is "their" hospital and they value their hospital connection and association.

You must remember that the hospital expenditure of this country runs into many millions of dollars each year and this fund is expended directly or indirectly by our profession. We decide what cases require hospitalization; we decide on the duration of the stay of each individual patient, and the medicine, food, and dressings used during their hospital stay. There is no suggestion in any quarter that the primary function of our hospitals—the adequate care of the sick—should be allowed to suffer in any way, but there is now a section of organized public opinion which is beginning to question our divine right in hospital matters. I refer to the Compensation Boards in our various provinces. They can say, and do not hesitate to say to us, "This case may and this case may not be hospitalized, and you must explain why this case was hospitalized for so long a part of his disability." In other words, whenever we keep a compensation board patient in hospital beyond the period we can justify to the Board there is a direct financial loss to our hospitals, because the patient does not feel that this is an affair of his. If this is true to-day, how necessary it is that we should recognize our responsibility, because to-morrow, or a decade hence, some measure of health insurance will be in operation in some sections or all of Canada, and your responsibility and mine to our hospitals in these financial matters will be an even more vital matter than it is to-day. Furthermore, a hospital staff co-operating in these household economies will, I am sure, find co-operation and assistance from the Board of Management in hospital development. They will find that through this co-operation they can direct and advise our hospital extension, changes and replacements, and, furthermore, no hospital staff that concerns itself with hospital costs, be it maintenance or construction, but will find its advice eagerly sought and carefully weighed.

When each month, or each year, our Boards of Management ask our co-operation in husbanding the economic resources of our hospitals, I claim that we can never again join James I in proclaiming that "it is presumption and high contempt in a subject to dispute what a king can do, or to say that a king cannot do this or that." The Stuarts have demonstrated the folly of this line of reasoning.

Another function of our hospital staff is health education of the community. The hospital should not only be the community centre for

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healing but the community centre for health. The hospital staff, adequately and sympathetically caring for the sick, has already the willing ear of the community in dealing with the doctrine of health, or disease prevention. Throughout the length and breadth of the land there is a very real and insistent demand on the part of the general public for health education. Volunteer organizations, such as the Red Cross and various public health societies, have recognized this need and are now actively meeting much of this demand. Only a small part of these activities are under the direct supervision of the medical profession, though it was to us that the general public looked originally and still look for this teaching. They accept it when it comes with the approval of the medical profession, and it is our own fault that we have so largely lost this excellent opportunity for contact with mankind in general. A splendid work is being done by our Post-Graduate Committee in sending out whenever possible, with each team, a member of our own association competent to give a public address on some phase of health education. I know from experience that in the smaller communities these addresses are extremely popular and are doing a great deal of good, both for the public and our own profession. The term 'doctor'', as you all know, originally meant teacher and in so far as we are neglecting this primary duty, in so far are we failing to achieve an easy victory. In just that degree are we losing the understanding, sympathy, and support of the general public, and in just so far are we opening the way for healing sects and cults and ill-advised public legislation.

Our responsibility to our community in connection with research requires no further notice. The physicians in any community who appreciate their opportunities as teachers, both within and without their hospitals, will not lack enthusiasm for research, nor will they lack the funds for its materialization.

From this we pass on to the first mentioned of our ancillary hospital functions, the teaching and training of physicians and nurses. To-day I will deal only with the training of physicians.

While it is true that our laws wisely require that each student after graduation shall spend at least one year in hospital service as an interne, our hospital attending staffs have perhaps been rather leisurely in recognizing the moral obligation of preceptorship which they assume when they install an interne staff.

The student beginning his interneship has successfully completed many years of training which has been largely theoretical. He has had practical demonstration of what to do and how to do it. He knows how to take a good history, how to make a good physical examination, and his university teachers have certified him as fit to begin to carry responsibility. They have guaranteed him as worthy to begin his practical work in our guild under our supervision, and he comes to his first hospital appointment full of enthusiasm, loyalty, energy and good will, and, what is perhaps of almost equal importance, he has the idealism of youth and the sense of fair play developed in clinic lecture room and football field.

When the hospital Board agree to accept an interne, they morally agree to provide him with that practical experience to which he is now entitled; they covenant to allow him to do or to assist in doing, always under supervision, those procedures which he has learned about in an academic way; they promise that the year he spends as interne will be the most valuable experience he has yet had in fitting him for his active professional life. And the new interne looks to the attending staff of that hospital to materialize those covenants. In other words, the hospital, be it open or closed, which establishes an interne service automatically admits its responsibility as an educational centre. To the interne this teaching is to come through doing, and in no other way can a hospital staff justify this year spent under their supervision, for one cannot imagine a hospital giving a salary sufficient to justify a student in spending a year where he could not grow in soundness of thought, in directness of intuition, in development of judgment, as well as in deftness of touch and manual dexterity.

I have mentioned before that the student enters his hospital life capable of writing a good history, but he does not enjoy this routine detail work any more than you or I do, but he is glad to do it if his history is used in working up the case. If it is never looked at, if it is treated as of no value, you may be sure that the histories written at the close of his year's work will be of no value to himself or to any-

body else. On his histories, as on his other work, he will welcome constructive criticism, and he will grow under it. He wishes to make his own diagnosis and compare it with his chief's, and if he is wrong he is entitled to the time necessary to show him where his appraisal of clinical signs and symptoms was at fault. He welcomes mental growing pains, if he can be sure he is growing. He is not content to gain a so-called obstetrical experience by giving an anæsthetic, nor to scrub for an operative case, and have no more responsibility than to hold a retractor. He is not willing to answer night emergency calls from private patients whose case histories are not open to him and where he has not been allowed to make a physical examination. He has had a good training, and is not prepared to appear ridiculous in the eyes of either patient or nurse. Orders for patients he naturally expects will be given through him, and his chief should surely spare time to explain to him why a particular procedure is being carried out. If the case is obscure and a consultation is held surely he should be present. When the work of the hospital is reviewed at the regular staff meetings, he should be present and should be prepared to give his findings in the cases under discussion. He should be prepared to do this and should be asked to do it. He is entitled to help and direction in his medical reading, and he is entitled to library facilities to enable him to carefully study his cases. If in connection with some medico-legal case he is called into court as a witness, he has every reason to expect assistance and guidance from his chief, so that he may reflect credit on himself and on his profession. If he is going to spend a year in a general hospital he looks for a general practical training in the fundamentals, medicine, surgery, obstetrics, anæsthesia, and accident surgery. He hopes for some experience in some of the special fields, such as urology, eye, ear, nose and throat, and he is entitled to a competent diagnostic service of radiological and pathological laboratories.

More and more it is becoming necessary for our young medical graduates to seek internships in the so-called non-teaching hospitals, *i.e.*, hospitals not connected with any medical school. I do not believe that our profession in general have yet fully awakened to their responsibilities in this matter. Their responsibilities! Nay, their opportunities! for no man can teach without learning himself; no man can discuss a case with his own interne without clarifying his own thought; and no hospital can embark on a course of tuition, be it for nurses or physicians, without very definitely improving the character of the work done in that institution, for here as elsewhere.

> "More blest is he who gives than who receives
> For he that gives doth always something get."

Your hospital is not entitled to an interne service because it has 100 or 1,000 beds always full, but it is entitled to that service if your medical staff are willing to have those cases properly studied under their supervision, and if they are willing and capable to teach from that clinical material. Willing and capable of teaching! How much is implied in those words?

> "The teacher is more to be reverenced than even the father, for he is the father of the soul and mind, when the other may be but the father of the transitory body."

I believe that no man can attend our great Canadian French and English medical schools and not come under the influence of one or two great teachers; more than that scarcely any man can hope for. It is perhaps open to doubt if he could appreciate more than that. I believe they are in our teaching schools to-day, because I know personally that they were in McGill in my own student days, and I found another in my chief in the Episcopal hospital, Philadelphia. The teacher not only gives you knowledge in assimilable form, but he gives you interest, enthusiasm, breadth of view and develops your latent ability to weigh evidence. The interne who finds in his chief a personal ideal, as well as a clinician and teacher, will remember that year of training long after his academic years have become a hazy past. Such an experience will strike the tempo of his professional life. "For who shall number the years of remembrance." This year may well decide whether he will remain a student and perhaps retain some of his idealism throughout his professional life, or whether he will become mentally lazy and commercially acquisitive.

Any hospital and any hospital staff that is not prepared to give at least what I have outlined is not entitled to an interne staff. Do not think for one moment I am discussing

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a purely academic problem. I can give you chapter and verse for every suggestion I have made to-day and this question is a vital one to every major hospital to-day. The time is not far distant when the hospital that is not worthy of an interne staff will either not have one or will pay handsomely for it. There are those who believe that the difficulty some Canadian hospitals are having to-day in securing internes (I quote here from a recent article in our own *Journal*) is because "Canadian graduates do not realize that Canadian hospitals offer them a course equal to that which they can obtain elsewhere." My point is that those hospitals which offer a course "as good as can be secured elsewhere" have no difficulty in securing internes, and that those hospitals which do not offer satisfactory interne service are probably better known to the members of our graduating classes than they are to the profession at large.

Your hospital is to-day appraised by the members of the final year in every medical school as a desirable or undesirable appointment, and you may depend that in the main your applicants will be largely what you yourself have asked for. In some countries students may appeal to the national medical organization for advice in this matter, and, I think, rightly so. This condition has arisen, not because it is a convenience to the student, but because the individual hospitals are anxious to be rated by the national body as offering desirable, efficient, and comprehensive interne service. If your hospital has had an interne service in the past, and you find difficulty in maintaining that staff, I would suggest that it is a serious reflection on your attending staff and on the standard of medicine in your community. It is not because your attending staff cannot teach; it is because they will not teach; it is because of selfishness or the taint of commercial acquisitiveness. Our hospital staffs, east and west, north and south, have had the required training, and with the increasing hospitalization of our population they have the material. Have they the inclination? If you want an interne staff, or a larger interne staff, and cannot secure it, I ask you to consider the problem fairly and ask yourself if you really deserve it, and, while pondering the matter, remember what Dr. Doane says in this connection: "if 'My interne', as spoken by the visiting physician with the accent on the pronoun, implies proprietary or servile relationship, educate your chiefs. 'My' as used by a chief should mean his to instruct, his to tutor, to help in every educational phase of his hospital life."

Over and above all the material things necessary for each patient, over and above the careful appraisal of clinical signs and symptoms and the resulting appropriate treatment, have we any further duty in our daily work? In one of his delightful essays, Weir Mitchell wrote "but over and above all this there is, as I have urged, some mystery in the way in which certain men refresh their patients with their presence. I fancy that every doctor who has the power, and sooner or later he is sure to know that he has it, also learns that there are days when he has it not. It is in part a question of his physical state, at times virtue has gone out of him." This intangible healing power which comes so often through the laying-on of hands, whether in a benediction, or in percussion, this confidence of relief, has been articulate through the ages in the cry "If Thou wilt Thou canst make me whole." This reaching out for what, unfortunately, we cannot always offer, this continues, and will continue, in spite of the progress of the purely scientific side of medicine. Here, the physicians of the past personified the highest traditions of our art and part of our hospital duty lies clearly before us here. It can be delegated to no hospital social service; it is ours to do, to bring to each one that helpful sympathy, the genuine will to cure, which can be measured in no material way, and which perhaps is more needed in the delirious acceleration of to-day than it ever was in the past.

In conclusion, all of you, I am sure, feel as I do, that we have only partially considered this question. I believe that in the discussion to follow many points will be amplified and new ones added. You can each one of you think of important phases of the question, which I have only suggested. To those of you who feel that in most instances the spiritual is the real, and that, if we can follow the star of idealism, all material things will be added unto us, to those I would say, seek in Micah the 6th chapter and the 8th verse and you will find the spiritual guide for us all.

"What doth the Lord require of thee but to do justly, to love mercy, and to walk humbly with thy God."

An Address

ON

INDUSTRIAL HYGIENE AND THE MEDICAL PROFESSION*

BY WADE WRIGHT, M.D.,

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I AM most grateful for the honour of the invitation to address the Canadian Medical Association and for the privilege of discussing before you certain aspects of industrial hygiene.

Improbable as it may seem to many of you, I feel very certain that there is no subject of greater significance to Canadian medicine and to Canadian physicians than that of industrial hygiene. Canada, old in years, young in spirit, almost incredibly rich in natural resources, is facing an opportunity to develop a new social order. Canada possesses a wealth equalled by few nations, in her grain lands, her forests, her mines, and in her hydro-electric power. To supplement this material wealth, she brings that which is more precious still, the character and courage and vigour of two great peoples, now one, who have chosen, in their strength, to struggle with the wilderness and in it rear a mighty commonwealth where freedom of opportunity and social justice shall prevail.

It has been inevitable that first her sons should labour close to the earth, that they should find their livings in fields and forests and in ships. With the opening of her mines and with the development of her power resources, however, a new order must come, for where there is abundant and cheap power, industry will inevitably find its way. A nation dominantly agricultural will become, for better or worse, a nation dominantly industrial. It is for Canadians, and, in no small degree, for the Canadian medical profession, to determine the nature of the transition and whether or not the new order shall be a fortunate and a happy one.

Man lives by faith and love and labour. The work which men and women do, the conditions under which that work is done, and the pay which they receive for doing it, determine in very great measure the economic and physical factors in their own lives and in the lives of those dependent upon them. The house in which a man and his family live, the clothes they wear, the food they eat, their schools and churches, and recreation are those made possible or necessary by the circumstances of employment.

It is perhaps no less obvious that capacity for labour in factory, office, forest or mine, is largely dependent upon physical competency. Ill health, whether totally incapacitating or not, must be reflected in lowered productive efficiency and ultimately in impaired earning power and discontent. Ill health, uncontrolled, inevitably leads to the curtailment of the working and earning period of life, to under-employment, and to dependency, if not indeed to premature death. Recent figures have shown that the expectation of life at age 20 of men not engaged in industry is 49 years; for those in industry it is 42 years. This reduction in expectancy of 7 years is a heavy price to pay for that which many leaders of industry would term "industrial progress." Furthermore, management unescapably shares with labour a large portion of the cost of industrial sickness.

Even those who are optimistic enough to believe that the span of life may be materially lengthened, a belief, incidentally, scarcely warranted by fact, would probably be reluctant to assert that the measurement of man's life should be limited to a single dimension. It is not unreasonable to consider the breadth and depth of life quite as worthy of extension as is its length.

Industrial hygiene is a term which connotes

* Delivered before The Canadian Medical Association, Montreal, June 19, 1929.

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to many a department of medicine concerned essentially with such vagaries as rare poisonings and the illusive subleties of dusts and ventilation. It is, in truth, on the contrary, as broad and varied in its implications as are the health problems of men and women who work. Industrial hygiene is the health of the worker and, in consequence, with the exception of those few unfortunates whose medical practice is exclusively among the lilies of the field, industrial medicine is part of the daily burden of all physicians, even of the pædiatricians—for that matter, especially of the pædiatricians, for children of workers will be the workers of the new day.

Industrial medicine is of concern to the medical profession generally, because it is the medical profession generally which must offer to an industrial population the technical guidance and care which it requires in matters pertaining to health. Physicians employed part time or full time in industrial or mercantile establishments, on railroads or by mines, unless they are found in remote and isolated communities, can do no more, should do no more, than render services in emergencies and, through continued vigilance in their supervision of the health of workers, direct those in need of remedial or corrective measures toward trustworthy medical resources.

All too often through misunderstandings on the part of private practitioners, or through selfishness or tactlessness on the part of plant physicians, irritation and difficulties have developed between the two groups. Such conflict is needless folly, for the functions of the two are not antagonistic but complementary. The industrial physician cannot accomplish his task without the private practitioner and good plant medical practice invariably leads to more and better medical practice in the industrial community.

Industrial hygiene, aside from a limited but important body of knowledge of specific occupational diseases, is not a thing apart, a thing of itself, to know or to write about or talk about. It is, rather, an avenue of approach to the health problems of a very large portion of the population. It involves the exercise of human interest which, once assumed, leads to a better grasp of the job to which the medical profession has set its hand.

In more practical terms, it concerns, for example, such matters as the identification of the dominant health problems in a community by cause, by age, by sex and occupation, conditions which unless identified can never be purposefully attacked. It makes possible the early recognition of disease as does no other mechanism in our social structure. It appeals to the skill and sympathy of physicians, to the end that the functional capacity of individuals be clearly recognized, that function be promptly restored after disease or injury, and that men and their jobs may be reasonably well adapted to each other.

The physician's lot is not always a happy one. He has been known to bewail, in the sanctity of the family hearthside, the stupidities of much of the work which constitutes his daily routine. He very often feels that he is unable to see or to grasp the essential factors involved in the causation of the physical ailments which are brought to him and that his function is largely palliative. He does his best, perhaps a little less, and saves his face behind the ancient cloak of mysticism worn by physicians since the dawn of time. Better things await the man of medicine.

Dealing as they do with successive individuals in office or in homes, the members of the medical profession have in great part developed habits of mind which render it peculiarly difficult for them to recognize the broader aspects and common factors in problems of health and disease. They have been inclined to leave these matters for that group on the fringe of the profession known as the public health authorities. As a matter of fact, the public has neither health nor disease. The public's health can be but the composite picture of the health of the individuals which constitute that public. The private practitioner, in spite of himself, is in reality the most important of public health officers.

Through the study of the causes of sickness and death in various groups of individuals, each relatively homogeneous, can there be gained much of the knowledge requisite as a basis for their control. Industrial and mercantile organizations afford the opportunity for such group studies, serving as laboratories and at the same time reaping the benefits of the research. Such studies are astonishingly il-

luminating. Consider, for example, the death rates for the several social classes published recently by the Registrar General of England and Wales, showing the progressive increase in mortality, as one passes from the highest social and economic level to the lowest. The death rates per 100,000 from respiratory tuberculosis are for the five social classes, respectively, 73, 126, 146, 150, and 209; for valvular heart disease they are 33, 52, 56, 62, and 74; for all causes of death, 743, 862, 870, 921, and 1,151.

A similar picture is portrayed in the mortality among the several classes of policy holders in the Metropolitan Life Insurance Company; low rates among Ordinary Policyholders, far higher rates among Industrial Policyholders, and intermediate rates among those of the intermediate class, covered by moderately small policies.

Mortality studies of various occupational groups disclose facts no less startling. Again do the excellent data of the Registrar-General reveal the appalling mortality from respiratory tuberculosis among such occupational groups as tin miners, grinders, slate masons and pottery workers, findings confirmed in insurance mortality records. Similar excessive occupational mortalities are reported for other causes of death. It is of passing interest that there is no important relation of occupation and deaths from heart disease.

If morbidity be considered instead of mortality, again do statistical studies present new visions of the work we have to do, with plentiful indications of where and when it should be done. The analysis of illness among industrial workers causing incapacity up to six months in duration has shown twice as great a loss from rheumatism as from respiratory tuberculosis and it can be localized by sex and age. It has shown appendicitis as almost as great an immediate problem as tuberculosis, and all digestive disorders combined, almost four times as great. Women have appendicitis at almost twice the rate prevailing among males. In one plant acute respiratory disease, such as pneumonia may be overwhelmingly predominant; in another, digestive disturbances; in another, arthritis. In one industry peritonitis was scores of times more prevalent than in all industries combined. There is a higher incidence of neuritis than of organic heart disease.

Findings such as these await the physicians who are eager to watch the fireworks in display, who are not content to putter among the pathological burned out remains on the day following the celebration. The display is being held in any sizeable industrial group.

Physicians in industry, working with physicians in industrial communities, can, if they will, through their sustained contact with industrial workers, and particularly through the medium of routine physical examinations, detect disease in its early stages. This requires, it is true, an interest greater than most men possess in incipient and apparently trifling maladies. It requires more than the customary ritual in the laying on of hands and stethoscopes. It requires a willingness to listen to the plaint of the patient, for he has much to tell. It requires, above all, technical skill, much patience, and the capacity to command the trust and respect of those they serve.

Industry can no longer be an inexorable monster to wring the strength from men and women, then to cast them aside. It must and can find places for individuals of varying physical and mental capacity. It can and will make use of those who with the passing years find their physical powers waning. It admits of a high degree of adaptation of man and the work to which he is assigned, but these things it cannot do without the guidance and the aid of physicians. The medical profession can well afford, in the interests of its own technical accomplishments, to regard far more seriously and rationally than is the prevalent tendency the part which work plays in the life of most men and women.

How many hospitals or physicians make accurate record of the specific occupations of their patients? How many physicians fully recognize the numerous industrial, social, and economic threads in the tangled skeins of distress and sorrow thrown hour after hour upon their desks? How many general surgeons really respect casualty surgery and think in terms of working hands and arms promptly returned to earning power? How many orthopædic surgeons are willing to apply their fine talents to problems of functional restoration and abandon their passion for measuring periods of

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treatment in astronomical terms, such as light years?

Industrial hygiene is surely a field for the best that medicine has to offer. Nothing less is good enough. Nothing less will even pay in dollars. For all that is said about the economic aspects of medical service, there is no honest physician who does not know in his heart that the money now paid for medical care would, were it paid for competent services, buy all that the public needs. All that the plumber, or the grocer, or the piano tuner asks of his doctor is the same standard of performance which the doctor expects when he goes into the market for plumbing or bread or piano tuning.

The industrial worker need not be the object of the solicitous concern of hospital trustees and ladies' aid societies. He can and will obtain for himself and his family sooner or later trustworthy medical and hospital care at a price he can afford to pay. Why not?

You in Canada have a glorious opportunity to work out your new plan of things with a minimum of error. You may well profit by the blunders which we, over the line, have made. The coming of industry to Canada need not mean the scarring of a fair land, the creation of communities which are an offense to man and surely to God. With forethought and with vigilant care industrial Canada can be made a place where men can work under safe and healthful conditions, where they can work with those who employ them, not under them, and reap the proper reward for their labour. Their children can grow in health and in the joy and opportunity which are the rights of childhood. Such a Canada is not a Utopia; we are living in it now.

Industrial hygiene is recommended to you, not as a panacea for all industrial ills, but rather as a vehicle for the very potent therapeutic principles of technical knowledge, human sympathy, and common sense.

THE PRESIDENTIAL ADDRESS BEFORE THE ONTARIO MEDICAL ASSOCIATION*

BY E. A. MCQUADE, M.D.,

Trenton, Ont.

[In beginning his address, Dr. McQuade expressed his thanks to the Association for electing him to the presidential office and his appreciation of the efforts of those associated with him to make the Annual Meeting a success. He continued].

IN calling to mind presidential addresses which one has heard and read during the past few years, one is reminded that the field which the President is at liberty to cover in his annual address is as wide as the seas; and, as has been said about our own great country, may be likened unto the telegraph wires which stretch from pole to pole. It is not my intention to-night to carry you back to Hippocrates, Socrates, Galen and Company, and conduct you through the long journey of two thousand years up to the present time. I should like to touch upon a few points, some of which may be hackneyed, but all of which are of interest to us as representatives of the healing art in this province.

Looking for a few moments at medicine, as we read of it in history, we are struck with the fact that its progress was slow, because its exponents desired to prove all things. From time immemorial, cultists and faddists have come and spun their yarn and, finally, like the Arabs, have folded their tents to flit away; but medicine has continued to build, slowly, but nevertheless surely, fact upon fact, discovery upon discovery, until to-day we have not what we would claim to be an exact science but yet a science which is proving itself to be of great service to mankind. Knowledge, like the tide, is subject to ebb and flow, and, throughout the pages of history, we find epochs of advancement followed by periods of quiescence. During the past quarter of a century, scientific medicine has made remarkable strides. The teachings of Pasteur and Lister have become permanently and indissolubly assimilated in modern medical practice, and with their adoption we have seen marvellous advancements, both in scientific discoveries and thera-

* Delivered at the Forty-Ninth Annual Meeting of the Ontario Medical Association at Hamilton, May 29, 1929.

peutic accomplishments; and with what results! The orthopædist of to-day takes the crippled child, the deformed baby, the halt and the maimed, and, in thousands of instances, gives back to the world a human being who is either normal or nearly so. The plastic surgeon, owing particularly to his wide war-time experiences, finds it possible to make of the disfigured face a presentable personality. The internist is now surrounded by aids which two decades ago were unknown. In the field of blood chemistry, functional tests, therapeutic aids—physical, diagnostic and electrical—the facilities which are now offered to the sick are marvellously in advance of those which were available for our forefathers. A few short years ago, the diabetic knew, without pronouncement from his physician, that his days were numbered. Thanks to Banting and his colleagues, hopelessness in this dread disease has given place to the joyous thought that a useful life may be lived and continued with the help of insulin. The anæmias, particularly pernicious anæmia, have taken their long toll of lives, many of them prematurely. Here again, hope is brought to the hearts of thousands by the use of liver extract. Unquestionably, this dread disease is being mastered in a way which a few short years ago seemed unlikely. The death rate in diseases of infancy has been more than cut in two. The terrible white plague, tuberculosis, which claimed the lives of thousands of our people every year, has shown a decrease in mortality of approximately 50 per cent in the last fifty years. But, while mention is being made of these wonderful forward strides, we must not lose sight of the fact that that dread disease, cancer, continues to claim more people every year. It would appear that the mortality rate has definitely increased in the past twenty years. But, let us take courage. One day—and, please God, it may come soon — the cause and cure of cancer will be found. It may come with startling suddenness, or it may be long delayed, but the peoples of the world have some satisfaction at least in realizing that no efforts are being overlooked in the medical and scientific world to master this devastating enemy of mankind.

So much for our achievements of the past, particularly in the last quarter century. Now, what of the future! He would be a brave man indeed, and certainly one not lacking in effulgent imagination, who would undertake to forecast the future. However, with this apology, may I venture to predict, even if only for the pleasure of doing so, some things which I think we may reasonably hope for and expect? Infant mortality, particularly that resulting from the so-called children's diseases, will unquestionably decrease considerably in the not far distant future. People generally are just beginning to realize that diphtheria, scarlet fever, and other contagious diseases may be prevented. Why should children be allowed to run the risk of contracting these diseases, and thus take chances of more or less permanently injuring their bodies when we know that immunity may be established with comparative safety? It behooves our profession to educate the public to realize that prevention is better than cure.

Turning for a moment to the organic and constitutional diseases of adult life, I venture to say that the exponents of the medical and allied sciences will realize more and more their obligation to the public in teaching mankind what to eat, how to eat, how to work, the normal stress and strain which we, as individuals, should accept as our guide, in short—how to live. Then, mortality will be very greatly reduced and, conversely, longevity greatly increased. The span of life, within the last forty years, has increased by fifteen years, from 43 to 58. There is no reason why the biblical three-score years and ten should not be aimed at by all human beings. Again, I say, medicine of the future must stress and will stress the preventive side,—how to keep well—how to live. This is the task which we, as physicians, should recognize as ours, and thus give to mankind which looks to us for guidance in health matters, the instruction to which it is entitled. So much for scientific and applied medicine.

Now, may I direct your attention for a few moments to the subject of sociological medicine, or, put in other words, our relation to the public? Dr. McClure, of "The Bonnie Briar Bush," is a familiar figure to us all. In thousands of homes hangs the picture called "The Doctor". It thrills us to read and think of the good old days when the family doctor was not only physician but counsellor, adviser, and friend. Maybe he did not know a great deal about medicine, or as much, at least, as we think a good practitioner should know to-day. It was often true

that he diagnosed typhoid fever by the smell, and diphtheria by the croup; his old stethoscope was practically his only diagnostic aid—and sometimes we wonder just how much he heard through that stethoscope. But, he brought to bear upon the case in hand that greatest of all assets of any physician, namely, the ability to inspire in his patient that valuable something called confidence. The passing of the years however ushered in some changes. To-day, the family physician is no longer considered by the community to possess, along with the parson and perhaps the local judge and school teacher, all the knowledge of which the community boasts. Our educational system, making learning free for all, has made the average man very much more scholastic than he formerly was; and, with the coming of increased knowledge, the physician, if not altogether dropped from his lofty position in the community mind, has certainly been stepped down considerably. To-day, the man in the street is inclined to think he knows as much about most things as do those among whom he lives. There is a feeling abroad,—and we who are here to-night are not immune from that feeling — that equality means equality in practically everything. To meet this situation, the physician should have, along with his scientific training and equipment, the keenest perception and conception of the mental processes of his patients. It is a truism that the mind is master over matter. We do not ask the public to give us credit for any superior knowledge, but we have a right to expect of ourselves a scientific and sociological training which will give the public reason to respect us and our vocation. We hear much to-day about cults and fads,—schools of ultra-thought, anti-scientists, etc. All these forces are most anxious to assail the fundamental principles upon which scientific medicine rests. Public opinion is fostered and developed by the things upon which it feeds. Unquestionably, I say, and I think you will agree with me, public opinion no longer puts the medical profession on a pedestal. Far from it —and why? It remains for us to answer that question, if not to the public, at least to ourselves. As one who believes in his profession and looks forward optimistically, I am sure a solution can and will be found.

The third and last theme upon which I wish to touch, and that but briefly, is medical organization. Forty-nine years ago the Ontario Medical Association was born, because a group of practitioners felt the need of meeting together occasionally in order to exchange views and opinions upon medical practice. Keeping pace with our social development over the past half century, organized medicine has endeavoured to develop its field of usefulness. Our Association has a membership now in excess of 2,000. It should be more; but how are we to bring into the fold those several hundreds who, because of apathy, inertia, lack of interest, and other reasons, desire to stay outside? "Man liveth not unto himself alone". I cannot conceive of any honest practitioner believing that he can render the best service of which he is capable, when he never confers or consults with his brother practitioners. Medical organization offers to us all an opportunity first to know each other, and then, as our field widens and broadens, it brings together in larger company an accumulation of experiences and thoughts which, when given expression, means valuable information for those who care to listen. Sometimes, those outside the profession are prone to think that medical organization is synonymous with trade unionism, but, upon investigation, this idea will be found, indeed, to be a myth. If one takes the trouble to go back over the history of our own organization, it will be observed with interest, and also with pride, that the financial side of our professional life is seldom discussed, and rarely looms upon the horizon of our proceedings. It is true we have a committee on tariff and we do occasionally talk fees, but, in the aggregate of our deliberations, very little indeed. Then, why are we organized? We do not try to deceive ourselves or attempt to deceive the public that it is altogether for altruistic reasons. Such is not the case. Organized medicine means to us an opportunity to better equip ourselves for our tasks, and, thereby, acquire for ourselves dividends in mental happiness and occupational contentment which we know cannot be achieved by individual effort.

In matters of legislation, medical education, and public instruction we have not been unmindful of our duty, and it seems to me that the medical organization of the future will not only continue along the path we have followed but will undertake to enlarge its sphere of usefulness in all things pertaining to health. In this con-

nection may I offer one or two suggestions. There are few amongst us, if any, who will not readily admit that all communities which can afford to do so should have hospital accommodation. We have in the Province of Ontario to-day towns of 5,000 population and more without civic hospitals. Such a state of affairs is not in keeping with our progress as a civilized race. If organized medicine subscribes to the views I have expressed, then, I say, we should help to secure for all such areas better hospital facilities. Public instruction, creating proper public opinion, once again challenges us in this connection.

One other thought, if I may venture to express it. Organized medicine should consider it not only an obligation but a privilege to follow the trend of public opinion, and endeavour to meet it in the establishment of forms of medical practice, both as to their scientific and economic aspects, which are in keeping with the ability of the patient to pay. Many people, some with more money than brains, insist on running about from doctor to doctor and clinic to clinic because they "enjoy" poor health. They are willing to spend plenty of money to confirm their own suspicions about themselves. On the other hand, there is the honest toiler whose great ambition in life is to maintain sufficient health to do his duty. When he is sick, he wants to be made well, and by the shortest possible route. He does not want a lot of medical frills. He cannot afford to pay for them. We, as a profession, should see to it that he has placed at his disposal, and within his ability to pay, those medical aids which will help him. Now, I hear someone say that our public hospitals and charitable institutions offer all these services free of cost to those who cannot pay; but, it is not the charity group which gives us concern to-day, it is the middle class, the self-respecting members of society who desire to retain that self-respect by paying their way. They feel the financial pressure of sickness to be a burden which is becoming increasingly heavy. Organized medicine should help them to solve that problem; and our help, if unstintingly given, will not rest with offering free medical service, but will carry us into the fields of hospitalization and economics, and even into politics, before a satisfactory solution is arrived at. And we should be prepared to go all the way that is necessary in keeping with the dignity, honour and prestige of our vocation.

Before concluding these remarks, I want to take this opportunity of expressing to the gentlemen who have been associated with me on the board of directors and also on our various committees my deep sense of appreciation for the services they have rendered to organized medicine in this province during the past year; and, to the host of men and women who make up the Association, may I say your allegiance to the Association constitutes a very definite sheet anchor for the future practice of medicine, no matter what shape or form that practice in our land may one day take. We are living in changing times. Life does not stand still. We have only to look about us day by day to see that, in the fields of transportation, communication, education, research, and, in fact, in every walk of life, we march steadily forward. The torch of medical learning and medical healing, lighted centuries ago, comes down to us through the years, still burning and undimmed. May it be our privilege and pleasure, then, not only to keep it flashing as a beacon light to all those whose hearts and minds and bodies engage our attention, but may we pass it on to posterity as a symbol which says: "This light must never go out as long as sickness and suffering assails mankind."

"Neither the acutest genius nor the soundest judgment will avail in judging of a particular science in regard to which they have not been exercised."—Cullen.

"The reason why we teach so much that is not practical and in itself useful is because we find that the easiest way of teaching what *is* practical and useful. . . .The easiest and surest way of acquiring facts is to learn them in groups, in systems, and systematized knowledge is science."—Oliver Wendell Holmes.

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THE DIFFERENTIAL DIAGNOSIS OF CLINICAL CONDITIONS ACCOMPANIED BY JAUNDICE*

BY DUNCAN GRAHAM, M.B.,

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JAUNDICE is the term applied to clinical conditions in which the tissues, sclera, mucous membranes and skin are stained yellow by bile pigment. That this deposit of bile pigment in the tissues occurs in a variety of conditions associated with diseases of the liver and biliary passages, and in certain forms of anæmia, has been known and recognized by clinicians for a long time. On the other hand, the accurate diagnosis of the disease condition responsible for the development of jaundice in different cases has been only too often difficult or impossible. This has been due chiefly to our lack of precise knowledge of the physiology of bile pigment formation. However, the discovery of a suitable method for the estimation of bile pigment in the blood, recent investigations of the site of bile pigment formation, and the relationship of the liver to bile pigment metabolism, both in health and disease, have given us a new theory of the mechanism of jaundice, and a new classification of its clinical varieties, which are proving of the greatest value in the diagnosis of conditions accompanied by jaundice.

Bile pigment is derived from hæmoglobin. The older view that this transformation occurs in the hepatic cells must be discarded. In the light of recent investigations it may be stated that the bile pigment, bilirubin, is formed in the endothelial cells belonging to the reticulo-endothelial system. These cells, which are found chiefly in the spleen and bone marrow, and to a lesser extent in the liver (as the Kupffer cells), take up hæmoglobin particles coming from the disintegration of red blood corpuscles, which is going on in the body continually, remove the iron-free portion of the hæmoglobin, and form bilirubin. This in turn is carried by the blood stream to the liver, is taken up by the polygonal cells of this organ, is excreted into the bile capillaries, and through the bile ducts reaches the intestine. Here it is converted into urobilinogen by the bacteria of the intestinal tract; some is excreted in the fæces, and the remainder reabsorbed and carried to the liver by the portal vein, to be again taken up by the polygonal cells and excreted.

By the use of the method discovered by van den Bergh for the estimation of bilirubin in the blood it has been found that under normal conditions the blood contains a certain quantity of bilirubin—0.2 to 0.4 units—and that if from any disturbance in the body this increases to 4 units the tissues of the body are stained yellow. Jaundice, therefore, develops as the result of an excess of bilirubin in the blood, or a bilirubinæmia. As suggested by McNee, bilirubinæmia may result from an obstruction of the bile ducts to the outflow of bile, as from a stone in the common duct;

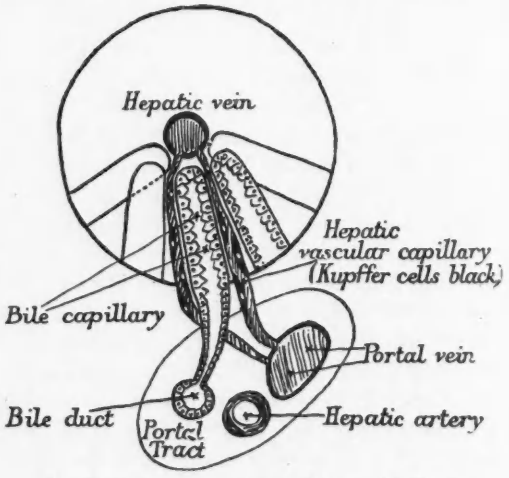

DIAGRAM OF LIVER LOBULE. (AFTER MCNEE).

from damage to the polygonal cells of the liver interfering with the secretion of bile, as in toxic hepatitis from arsphenamine poisoning; or from increased destruction of red blood corpuscles, resulting in an excess formation of bilirubin, as in familial hæmolytic jaundice.

In order to clearly understand how an obstruction to the outflow of bile, damage to the polygonal cells of the liver, or an excessive production of bilirubin may cause jaundice it is necessary to recall certain facts with reference to

*Read at the Sixtieth Annual Meeting of the Canadian Medical Association, Montreal, June 19th, 1929.

the structure of the liver and consider the pathological changes occurring under the conditions just mentioned. For this purpose McNee's conception of the structure of the liver lobule and the relationship to it of the portal vein, hepatic artery, and bile duct is very helpful. He represents the polygonal cells of the liver as a series of test tubes with the blind end towards the central vein and the lumen opening into the bile duct. On the outside of the tube, and between adjacent tubes, is a capillary network formed from the branches of the portal vein and the hepatic artery. This arrangement brings the blood in close contact with the polygonal cells of the liver. Under normal conditions the small quantity of bilirubin formed from the normal disintegration of red blood corpuscles is carried by the hepatic artery to the liver lobule, passes through the polygonal cells of the liver into the bile capillaries, and is excreted into the intestine. As has already been mentioned, part is reabsorbed as urobilinogen and the remainder excreted in the fæces.

If the common bile duct is obstructed the bile is dammed up in the bile capillaries and, as it cannot escape, is reabsorbed by the vascular capillaries and enters the central vein, thereby causing an excess of bilirubin in the general circulation, and a deposit of bile pigment in the tissues of the body results. In jaundice due to obstruction of the outflow of bile the polygonal cells are normal and able to secrete bile, and the bilirubin formed by the reticulo-endothelial system is normal in quantity. If the polygonal cells of the liver become damaged from poisons carried to it by the portal vein or hepatic artery the secretion of bilirubin is interfered with. As a result, the quantity not secreted passes directly into the central vein, causing a bilirubinæmia in proportion to the severity of the cell damage. Although the same poison may damage the red blood corpuscles and cause an increased formation of bile pigment, and even obstruction to the outflow of bile from pressure on the bile capillaries in the liver by the damaged polygonal cells, the primary and essential cause in this form of jaundice is damage to the polygonal cells themselves. In conditions causing an increased destruction of red blood corpuscles there is an excessive formation of bile pigment. The quantity of bilirubin formed and carried to the liver is too great for the polygonal cells to secrete rapidly enough. The excess, therefore, passes directly into the central vein, resulting in a bilirubinæmia. In this form, known as hæmolytic jaundice, the polygonal cells are normal and there is no obstruction to the outflow of bile. All varieties of jaundice therefore result: (1) from interference with the outflow of bile; (2) from damage to the polygonal cells of the liver; (3) from increased destruction of the red blood corpuscles. Upon this theory of the development of jaundice McNee has suggested the following classification:—

(1) obstructive hepatic jaundice;
(2) toxic or infective hepatic jaundice;
(3) hæmolytic jaundice.

Experience has shown that all clinical cases of jaundice can be classified under one or more of these three varieties.

Our first object in the diagnosis of a case of jaundice should be to determine from the results of our clinical examination the primary cause of the jaundice: interference with the outflow of bile, damage to the polygonal cells of the liver, or increased destruction of the blood; and our second object, the consideration of the possible clinical causes of the variety or varieties of jaundice present. The clinical examination must include an accurate record of the patient's complaint, a complete physical examination, and an examination of the urine and fæces for bile and urobilin, and of the blood for signs of anæmia. In the history of the present illness it is important to secure as accurate an account as possible of the patient's symptoms at the onset of the jaundice and up to the time of observation, noting not only the sequence in their appearance, their duration and intensity, but the time relationship between their development and the first sign of jaundice. Careful inquiry should be made as to the colour of the urine and stools. A change in the colour of the urine may be noticed before the appearance of jaundice in the sclera and skin. The colour of the stools may provide the clue to the diagnosis. They may be clay-coloured from the onset of the jaundice, as in obstruction due to gall stones in the common duct; normal or darker in colour in hæmolytic jaundice; or normal in colour at the onset, later becoming temporarily lighter or clay-coloured, in toxic hepatic jaundice. This is the usual history in catarrhal jaundice which is a toxic hepatic form of jaundice.

The presence or absence of pain is of very great importance in diagnosis. Jaundice following attacks of colicky pain is nearly always due to an intrinsic obstruction in the common bile duct, usually a gall stone, less often a simple stricture, or carcinoma of the wall of the duct. In obstructive hepatic jaundice due to extrinsic causes, as

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from pressure from enlarged glands in secondary malignant disease, and in toxic hepatic or hæmolytic jaundice, colicky pain is usually absent, the patient complaining only of aching or soreness in the right upper quadrant of the abdomen. Other symptoms present at the onset may suggest primary disease of the liver, or disease of other organs with secondary changes in the liver or bile ducts, or disease of the blood-forming organs. A history of lassitude, loss of appetite and general weakness, with or without fever, followed later by nausea and vomiting is common with disturbances of liver function. While these symptoms occur in other conditions, their presence before, and persistence after, the appearance of jaundice is very suggestive of intrahepatic rather than extrahepatic disease as the cause of the jaundice, *i.e.*, a toxic or infective hepatic type of jaundice. In the past history one should especially enquire into the question of previous attacks of jaundice, recurring infections, upper gastrointestinal tract disturbances, and any illness suggesting disease of the liver or blood-forming organs, and should try to determine if the onset of the present attack of jaundice is or is not related to a former illness.

In the physical examination of the patient, special attention should be given to the examination of the liver and spleen for local signs of disease, and to other regions of the body for primary disturbances, as myocardial disease with failure, pregnancy, etc., that might affect the liver secondarily and cause jaundice. In the examination of the liver its size, and the presence or absence of tenderness, are the two points of greatest value in diagnosis. The consistency and the presence or absence of irregularities are of lesser importance. Irregularities on the surface of the liver indicate intrahepatic disease as the cause of the jaundice, but unfortunately only the gross, and not the finer irregularities more commonly present, can be determined with any degree of certainty on physical examination. A definite enlargement or the presence of local or general tenderness of the liver points to intrahepatic disease as the cause of the jaundice. If one excludes cases of enlargement or tenderness due to venous engorgement from chronic myocardial disease with failure, to distension from bile in obstruction of the common duct, and to metastases from new growths, the finding of an easily palpable liver, more especially if associated with tenderness, indicates a toxic or infective hepatic type of jaundice. Metastatic new growths in the liver may cause a marked enlargement, but if jaundice is present it is more likely to be due to pressure on the common duct from metastases in glands than from secondary new growths within the liver. In certain cases of jaundice the liver may be smaller than normal. This is found in portal or atrophic cirrhosis, and in acute or subacute necrosis of the liver, commonly called acute yellow atrophy, a condition in which a toxic or infective hepatic type of jaundice is present. In the early stage the liver may be palpable; later it becomes smaller than normal, due to necrosis or atrophy. In acute cases of necrosis the size of the liver is of more importance in prognosis than diagnosis.

As the spleen is often enlarged in diseases of the liver and in hæmolytic types of jaundice, it is important to examine for a palpable spleen. The presence of a definite splenomegaly with little or no enlargement of the liver suggests that the primary cause of the jaundice is splenic or extrahepatic in origin. In the hæmolytic type of jaundice the spleen is usually palpable, seldom large; the liver is normal in size and not tender. In biliary cirrhosis both spleen and liver are markedly enlarged, tenderness is slight or absent, and the jaundice is permanent, becoming more severe as the condition progresses. In portal cirrhosis the spleen is just palpable, the liver moderately enlarged, normal or smaller than normal in size.

If the clinical history suggests disturbances of regions of the body other than the liver and spleen, which may secondarily affect the liver and cause jaundice, special attention must be given to the physical examination of the system or systems affected. In most cases valuable information can be obtained from the examination of the stools, urine and blood. A sample of the stool should be examined macroscopically and tested for bile pigment and the urine tested for bile pigment and urobilin. With complete obstruction of the common duct the urine contains bile, rarely urobilin; in toxic or infective hepatic jaundice, bile and urobilin; and in hæmolytic jaundice, urobilin and no bile. If a hæmolytic type of jaundice is suspected the fragility of the red blood corpuscles should be determined. The presence of a heightened fragility is diagnostic of familial or acquired hæmolytic jaundice. In recent years the van den Bergh test for the detection of bilirubin in the blood has been employed in the differentiation of the various types of jaundice. This test gives a prompt "direct reaction" in obstructive hepatic jaundice, and an

"indirect reaction" in hæmolytic jaundice, and is of use in the diagnosis between these two types. At the onset of toxic or infective hepatic jaundice a "biphasic reaction" is present, but later a "direct reaction" occurs in nearly all cases, which makes the test of little positive value in the diagnosis between an obstructive and toxic hepatic jaundice. The presence of a prompt direct reaction, therefore, is no indication for operative interference, unless the other clinical findings indicate that the jaundice is due to obstruction of the extrahepatic bile ducts.

With the data obtained from the clinical history and the physical and laboratory examinations, one proceeds to determine the variety of jaundice present. The diagnosis between a hæmolytic and an obstructive or toxic hepatic type of jaundice is not difficult. In the hæmolytic form the jaundice is rarely severe; the onset is usually insidious and the patient is not acutely ill, except in certain rare cases of acute hæmolytic anæmia. The liver is not enlarged and the spleen may or may not be palpable. The stools are normal or darker than normal in colour, and the urine shows urobilin and no bile. In the differential diagnosis between a primary obstructive hepatic type of jaundice and toxic or infective hepatic jaundice with signs of obstruction, correct diagnosis is often difficult. One must attempt to differentiate an obstructive intrahepatic lesion from one due to extrahepatic causes, for in the former operation is rarely indicated, while in the latter operative treatment is often necessary. The following points seem the most helpful in the differential diagnosis of these two types of jaundice: the presence of colicky pain indicates an obstruction of the common bile duct as the cause of the jaundice; if it is complete the stools are clay-coloured from the beginning of the jaundice, and the urine contains bile and usually no urobilin. An easily palpable liver, especially if associated with tenderness, suggests intrahepatic disease and a toxic or infective hepatic type of jaundice. The stools are usually normal in colour at the onset and later become paler or clay-coloured if signs of obstruction develop. The urine contains bile and urobilin.

Having decided upon the type of jaundice present, one must consider next the second object in diagnosis, the possible clinical cause. Bearing in mind the different causes of jaundice, their clinical manifestations, and the type of jaundice, according to the above classification, present in each, one can usually arrive at a correct diagnosis.

In this paper no effort has been made to consider in detail the different clinical causes of jaundice as these are familiar to all, but rather to review our present knowledge of bile pigment metabolism and to indicate the way in which it can aid us in the clinical investigation of patients suffering from the symptom—jaundice.

"PARAFFINOMA" OF THE RECTUM.—In the Section of Surgery, British Medical Association, July 26, 1929, Dr. A. T. Bazin (Montreal) described a case of "paraffinoma" of the rectum resulting from the injection of melted hard paraffin for the treatment of prolapsing internal hæmorrhoids. The patient was referred to him with the diagnosis of carcinoma of the rectum. At the distance of 1½ inches from the anus was a nodular mass completely encircling the bowel and producing marked stenosis; the vertical extent of the infiltration was 2¼ inches. The mucosa was smooth, mobile, and non-ulcerated. Extending distally from the constricting ring were tongue-like processes under the mucous membrane. The tumour was resected, preserving the lower end of the canal and sphincters and restoring continuity by rectorrhaphy. Another case—of paraffinoma of the thigh—was reported in a woman who had received three injections of camphor in oil as a cardiac stimulant eight years previously. Lantern slides were shown illustrating the histology of the tumour in these two cases. Dr. Bazin said that clinical observation and experimental work with monkeys had demonstrated that minerol oils, when injected, might cause foreign body reaction and tumour formation. In some cases the injected paraffin oil had spread along the lymph channels and lymph nodes, producing a condition simulating tuberculous adenitis or malignant lymphatic metastases. Vegetable oils injected experimentally had not produced these tissue masses. Mr. J. P. Kilner condemned the use of injection of paraffin into the human tissues. He had seen a large number of pathetic cases where paraffin had been injected to restore the contour of the face and neck. The histological appearance of the paraffinomata removed were similar to those demonstrated. One case of a large epithelioma which extended from the clavicles to the nipples was described; it had developed after the injection of paraffin.

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THE LATE TOXÆMIAS OF PREGNANCY*

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NO one in this audience needs to be reminded that the toxæmias of pregnancy constitute a serious menace to the health and future well-being of the pregnant woman and her child. Dr. Helen MacMurchy's report showed that of 1,532 maternal deaths in Canada from July 1, 1925, to July 1, 1926, 344, or 22 per cent, were due to the toxæmias of pregnancy. In England and Wales during the year 1926, out of a total of 2,860 maternal deaths, 524, constituting 18.3 per cent, were due to puerperal albuminuria, nephritis, and uræmia. In the United States Registration Area during the year 1921 there were 15,027 puerperal deaths, of which 4,032, or 26.8 per cent, were due to puerperal albuminuria and convulsions. According to Eden and Holland, the toxæmias affect 3.5 per cent of all pregnant women. In 2,656 confinements occurring in the public wards of the Winnipeg General Hospital from July 1, 1923, to December 31, 1928, there were 119 cases of toxæmia, an incidence of 4.48 per cent. In 4,202 confinements in both public and private wards of this hospital, during the years 1924 to 1928 inclusive, there were 177 toxæmic cases, an incidence of 4.21 per cent. In the public ward series, out of 119 cases of toxæmia there were two deaths; and in the other series (public and private admissions), in 177 cases of toxæmia there were 7 deaths.

In addition to the maternal mortality caused by the toxæmias there is a vast amount of morbidity and a tremendous wastage of fœtal life. Of all the maternal diseases, toxæmia is the one which is most lethal to the child. Thus, Holland, investigating 301 fœtal deaths, showed that seventy-seven, *i.e.*, 26 per cent, were caused by albuminuria, eclampsia or accidental hæmorrhage. Moreover, many children born alive from toxæmic mothers survive only a short time.

It is my purpose in this paper to consider what steps may be taken to cut down the number of deaths and casualties arising from this source, and to attempt to lay down the duties that an obstetrician owes to his toxæmic patient. Owing to lack of time I propose to leave hyperemesis gravidarum out of the picture; it belongs to the first third of pregnancy, whereas the other toxæmias occur for the most part in the latter third, and the pathological changes in the liver following pernicious vomiting are quite distinct from the changes found after eclampsia.

One must admit that there is no unanimity in the classification of the late toxæmias. The differences when analysed, however, are more apparent than real, and depend chiefly on the view-point of the observer, and whether the basis of classification is pathological or clinical. Cruikshank, Hewitt and Couper of Glasgow[1] offer the following classification:

1. Albuminuria (no other signs of toxæmia, or only slight and transitory signs).
2. Pre-eclamptic toxæmia (albuminuria, plus more or less severe toxæmia, but without convulsions).
3. Nephritic toxæmia (albuminuria, plus signs of chronic renal disease and in some cases cardiac involvement).
4. Eclampsia (severe toxæmia with convulsions).

H. J. Stander[2] lays down this classification:

1. Eclampsia.
2. Pre-eclampsia.
3. Chronic nephritis complicating pregnancy.
4. Eclampsia superimposed upon nephritis.
5. Low reserve kidney.

Pre-eclampsia he considers as a stage immediately preceding eclampsia, and forming only a small group, not more than 5 per cent of toxæmias, and, since his fourth class, "eclampsia superimposed upon nephritis," is simply a combination of eclampsia and chronic nephritis, (a very rare type of toxæmia), he narrows his classification to three main groups:

1. Eclampsia.
2. Nephritis complicating pregnancy.
3. Low reserve kidney.

* Read before the Section of Gynæcology and Obstetrics at the sixtieth annual meeting of the Canadian Medical Association, Montreal, June 21, 1929.

As the latter term is a new one it may be well to quote Whitridge Williams'[3] definition: "In the latter condition, (low reserve kidney), which may be due to congenital causes or to such factors as may have lessened the number of functioning glomeruli without producing a chronic nephritis, the kidney reserve has become so reduced that, while it suffices for the usual conditions of life, it breaks under the strain of the last months of pregnancy. That it does not lead to chronic nephritis is shown by the fact that the condition may or may not recur in subsequent pregnancies; and if it does recur, the symptoms are usually no more severe than on the previous occasion. In patients presenting this condition, the blood pressure is not greatly elevated, rarely exceeding 150 systolic and 90 diastolic; the albumin content varies between a trace and a couple of grams per litre, and, while the patient may present œdema, headache and more or less malaise, the condition improves with rest in bed and a restricted diet, and rarely if ever eventuates in eclampsia. Following delivery, there is a prompt return to normal and any trace of the condition is not detectable until a subsequent pregnancy occurs, when it may or may not become manifest in the latter months. Change does not occur in the chemical constitution of the blood, and the phenolsulphonphthalein output is not altered." The "low reserve kidney" class of Stander and the "albuminuria" class of Cruikshank, Hewitt and Couper evidently correspond.

G. F. Gibbert,[4] of Guy's Hospital, London, approaching the question of classification from the viewpoint of the late results to the patient, sets forth the following clinical types:

1. Patients with chronic nephritis preceding the pregnancy. These patients, of course, continue with signs of renal deficiency after pregnancy. They form the "nephritic" group.
2. Patients, presumably healthy before pregnancy, who develop albuminuria during pregnancy, but in whom all signs and symptoms of renal disease disappear after delivery, and do not recur with a subsequent pregnancy.
3. Patients, presumably healthy before pregnancy, who develop albuminuria during pregnancy, and in whom all signs and symptoms of renal disease disappear after delivery but recur regularly with subsequent pregnancies.
4. Patients, presumably healthy before pregnancy, who develop albuminuria during pregnancy, but in whom all the signs and symptoms of renal disease persist.

The patients of type 4, he says, are really members of the second group who, as a result of their first pregnancy toxæmia, develop chronic nephritis and thereafter become members of the first group. It is the cases of the third group, he states, that cause so much difficulty in classification since, although they are apparently healthy in the intervals between their pregnancies, yet they fairly consistently show recurrence of the albuminuria with each succeeding pregnancy. If these cases were rare, he says, we might explain their occurrence as the result of chance, but when we realize that they form about half of all the cases of albuminuria, it is quite obvious that something more than chance is operating in favour of recurrence. It will be observed that Gibbert's second and third classes correspond with the "low reserve kidney" class of Stander and the "albuminuria" class of the Glasgow school. All three classifications have a nephritic toxæmia group.

Gibbert is not alone in touching on the importance of recurrent toxæmia. James Young,[5] tracing the subsequent histories of cases of eclampsia and albuminuria treated in the Edinburgh Royal Maternity Hospital from 1919 to 1926, has shown that eighty-two out of a total of 144 subsequent pregnancies were vitiated by toxæmia, or intra-uterine disaster to the fœtus without toxæmia, that is a percentage of 57. He has further shown that of the albuminuric group 8 per cent subsequently showed signs of renal disease. F. S. Kellogg,[6] of Boston, has also called attention to recurrent toxæmia as a clinical entity and to the need for further study of this problem.

Evidence is accumulating that premature separation of the normally implanted placenta, or accidental hæmorrhage, is, in many cases at least, due to toxæmia. P. Willson,[7] considers that utero-placental apoplexy is caused by the inundation of the uterine wall with a toxin of the nature of a hæmorrhagin, liberated from the placenta, and, naturally, producing its maximum effect at the site of its absorption and greatest concentration, and that accidental hæmorrhage is probably in the great majority of cases a manifestation of the same process. Kellogg, Taylor, Eades and Weller[8] believe that every effort should be made to link up these cases with the toxæmia-chronic nephritis group and study them with careful tests.

Of the measures designed to lessen the damage caused by the toxæmias, prophylaxis

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far outweighs any method of treatment to be applied after convulsions or coma have supervened. Prophylaxis is summed up in "prenatal care." In our present state of civilization, and with our present lack of knowledge regarding the toxæmias, we cannot hope greatly to reduce the incidence of toxæmia, though with education of the public as to the need for proper diet, sufficient sleep and moderate exercise, and the avoidance of constipation during pregnancy, much might be done. With pre-natal care we can, however, hope to prevent the toxæmias from assuming malignant forms, and with post-natal care we can properly classify the toxæmic patients and give the advice appropriate to each class. Without such knowledge of our patients we may in our advice err on the side of too great severity or too great leniency. One may cause as much mental suffering by forbidding subsequent pregnancy to a woman in the "low reserve kidney" class as by sanctioning pregnancy in chronic nephritis.

I believe that the significance of the condition, recurrent toxæmia, has not sifted through to the bulk of our profession. There is still an unfounded optimism that if albuminuria occurs during pregnancy, either without other symptoms, or with only moderate rise of blood pressure, œdema, headache and malaise, all will be well after delivery. Yet we have seen from Young's figures that a woman who has had albuminuria has less than an even chance in subsequent pregnancies either of escaping toxæmia or having a live baby. Any pregnant woman with albuminuria and a systolic blood pressure of 140 or more is as critically ill, so far as end-results are concerned, as if she had acute appendicitis or typhoid, and equally with the victims of these maladies, demands our best care. Such a patient should be placed in a hospital if one is available. To trust that directions to the patient to rest in bed, feed on a watery diet, and take salines each morning, will be carried out in the home is to lean on a broken reed. Only in a hospital can these directions be carried out to the letter, and, in addition, the resources of the hospital laboratory are required for repeated examinations of the urine, blood chemistry, and renal function tests. In doubtful cases the eye ground should be examined. If, after treatment, and with favourable reports on the urine and blood, the patient can be definitely assigned to the "low reserve kidney" or "albuminuria" group, she may be discharged from the hospital with at least a reasonable hope that pregnancy will continue through to term or viability. If, on the other hand, the symptoms progress in severity in spite of skilful treatment, or if investigations reveal the existence of chronic renal damage, the pregnancy must be terminated lest worse evils befall.

Time does not permit discussion of the operative treatment of the toxæmias, but one point of marked importance in this connection may be mentioned. Stander has shown that ether, chloroform, nitrous oxide, and ethylene produce changes in the blood constituents very similar to those seen in eclampsia, as well as pronounced liver lesions and changes in the kidneys. In experiments with novocaine or procaine, injected subcutaneously, he was unable to detect any changes in the blood constituents due to the anæsthesia. In view of these findings it would appear to be wise, whenever operative procedures on toxæmic patients are indicated, to substitute local or spinal anæsthesia for general anæsthesia.

The admission of the possibility of recurrent toxæmia means that to do justice to our toxæmic patients we must greatly extend the duration and scope of post-natal care. Post-natal care should include the following points.

First, each patient should be carefully studied, especially as to the condition of the cardio-vascular system, blood-urea, and renal function, with possibly ophthalmoscopic examination, to ascertain whether there is any demonstrable sign of chronic renal change.

Second, the period of supervision should extend over months rather than weeks.

Third, the after-history of these patients and particularly the outcome of future pregnancies should be recorded.

Fourth, these patients should be told, as precisely and clearly as possible, the prognosis, especially the effect of possible future pregnancies.

Fifth, in the event of a subsequent pregnancy they should be advised to put themselves under supervision as soon as possible.

Sixth, gross sources of focal sepsis, *e.g.*, diseased tonsils and teeth, should be removed, since

these lower general resistance and may be a factor in the production of toxæmia.

REFERENCES

1. CRUIKSHANK, J. N., HEWITT, J., AND COUPER, K. L., The Toxæmias of Pregnancy, 5, 1927: Privy Council Medical Research Council; Special Report, Series No. 117.
2. STANDER, H. J., *Am. J. Obst. & Gynec.* **13:** 551, 1927.
3. WILLIAMS, J. W., *J. Am. M. Ass.* **88:** 449, 1927.
4. GIBBERT, G. F., *Brit. M. J.* **1:** 675, Apr. 13, 1929.
5. YOUNG, J., *Proc. Roy. Soc. Med.* **22:** 314, 1929.
6. KELLOGG, F. S., *Am. J. Obst. & Gynec.* **8:** 313, 1924. *Ibid. Boston M. & Surg. J.* **197:** 771, 1927; *Am. J. Obst. & Gynec.* **15:** 122, 1928.
7. WILLSON, P., *Surg., Gynec. & Obst.* **34:** 77, 1922.
8. KELLOGG, F. S., TAYLOR, J. V., EADES, M. F., WELLER, T. W., *Am. J. Obst. & Gynec.* **15:** 357, 1928.

GASTRIC AND DUODENAL ULCER*

A REVIEW OF ONE THOUSAND SEVEN HUNDRED X-RAY EXAMINATIONS

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THE following observations are based principally on a review of 1700 gastro-intestinal x-ray examinations done at my office and the General and Misericordia Hospitals. Nine hundred and ninety-five patients were examined at the hospitals and 706 at my office, the technique used in each place being approximately the same. All of the patients were referred by their physicians on account of signs and symptoms pointing to a lesion somewhere in the gastro-intestinal tract or gall-bladder. The following tables are a summary, with special reference to the occurrence of gastric and duodenal ulcer as reported from x-ray findings in these cases:

TABLE I

Gastro-intestinal examinations	1701	
Gall-bladder examined with gastro-intestinal tract in	460	
Gall-bladder only examined in	174	634
Colon examined with gastro-intestinal tract in	115	
Colon alone examined in	81	196

TABLE II

(X-ray findings in above)

Gastric ulcer	51
or 3 per cent of cases examined	
Duodenal ulcer	183
or 10.7 per cent of cases examined	
Gastric and duodenal ulcer in the same patient	5
Mal-functioning gall-bladder, with or without stones	243

It will be noted that in the total number of patients suffering with gastric ulcer (51) a duodenal ulcer also was found in 5, or approximately 10 per cent.

The question of gastric or duodenal ulcer is involved in practically every radiological examination of the digestive system, and a report without a positive or negative finding in regard to these two conditions is, in most cases, of little assistance to the referring physician.

In the differential diagnosis of abdominal disease the x-ray report has gradually come to be of prime importance, and its findings can also aid quite often in indicating whether the treatment shall be medical or surgical. The radiologist very often could, and probably should, state whether the ulcer is small and recent, whether it is obstructive, or whether perforation has already taken place and is walled off by inflammatory reaction. This information should have a bearing on the type of treatment.

I have made a practice of obtaining a brief history after the radiological diagnosis is made, and in the majority of instances the history and x-ray findings agree. If they do not, both radiologist and clinician should re-examine the patient. There are, of course, a certain number of patients with both gastric and duodenal ulcer, or with other combinations of pathological conditions, such as diseased gall-bladder and appendix, cholecystitis and duodenal ulcer, etc. In this type of patient, and they are not by any means uncommon, the clinical history may be confusing, and I believe a painstaking x-ray examination has some points of advantage.

The radiological signs of gastric and duodenal ulcer are usually described separately, but there

* Read before the annual meeting of the Alberta Medical Association, September 18, 1928.

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does not appear to be any substantial reason for this, especially since we do not know definitely the cause of either gastric or duodenal ulcer. While the description of radiological signs in these two diseases may be considered together on account of their morphological similarity on the films and on the fluoroscopic screen, it would not be accurate to make an x-ray diagnosis of "peptic ulcer". The actual lesion is either in the stomach or in the duodenum and is, therefore, either a gastric ulcer or a duodenal ulcer. If the internist considers that the treatment of gastric and duodenal ulcer should be the same, he might be excused for using the term "peptic ulcer", but for the radiologist or the surgeon to use it would be ambiguous and would indicate loose reasoning.

Another term sometimes noticed is "pyloric ulcer" or "juxtapyloric ulcer". From a radiological standpoint this would be a rare occurrence. As a matter of fact, gastric ulcer is practically always an inch, at least, from the pyloric sphincter, and while a duodenal ulcer may in time spread to the pyloric opening, causing obstruction, and even into the stomach, nevertheless it is duodenal in origin.

The most important x-ray signs of gastric and duodenal ulcers may be classified as follows:

1. *Direct or pathognomonic signs:—*
   (a) The niche
   (b) The accessory pocket
   (c) The organic hour glass contraction
2. *Indirect or spastic signs:—*
   (a) The incisura
   (b) The spasmodic hour-glass contraction.
   (c) The six-hour retention in the stomach
   (d) The hyperperistalsis of the stomach
   (e) The hypermotility shown by progress of the meal.

FIG. 1. — *Duodenal ulcer.* — Large amount of scar tissue causing deformity. Niche indicated by arrow. Patient presented classical signs and symptoms of duodenal ulcer, including 30 per cent 6 hour retention and had had two rather severe hæmorrhages.

FIG. 2.—Plates of the same patient as shown in Fig. 1, taken after the physiological effect of belladonna was produced. Appearance of duodenal bulb almost identical, showing that the deformity was due to scar tissue instead of spasm.

FIG. 3—*Duodenal ulcer.*—Repeated attacks in the spring and autumn for four years. No 6 hour residue. Characteristic niche indicated by arrow. No operation.

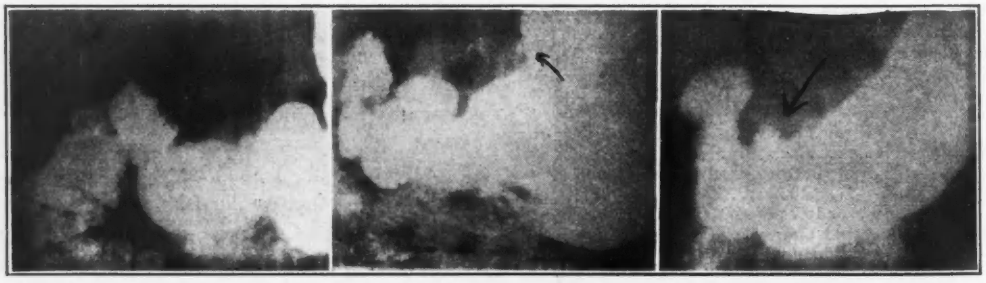

FIG. 4. — *Duodenal ulcer.* — Niche indicated by arrow. Clinical history and findings; those of early duodenal ulcer. Gall bladder negative with Graham-Cole dye test. No 6 hour residue. No operation.

FIG. 5.—*Gastric ulcer.*—Arrow points to niche type of deformity high up on the lesser curvature. Twenty per cent 6 hour residue. No vomiting; no hyperacidity. History and clinical findings, those of gall bladder disease.

FIG. 6.—*Gastric ulcer.*—Common niche type. Arrow pointing to penetrating defect on the lesser curvature near the pylorus.

The niche, as depicted on an x-ray film or screen, is simply the opaque barium filling in the recess or crater resulting from the destructive ulceration in the stomach or duodenal wall. In the great majority of cases, if correct radiological procedures are followed, and a sufficient number of plates are made, the lesion can be made evident. Giving belladonna until the physiological effects are produced will very often bring out a niche or accessory pocket in the duodenal cap. Some consider spastic deformity of certain types sufficient, but with a little more persistence and thoroughness the radiologist can, and I believe should, express himself from a pathological and anatomical standpoint. The niche is considered pathognomic of ulcer and to the radiologist it means ulcer, just as surely as the section does to the pathologist or the appearance at operation does to the surgeon.[4]

If the ulceration proceeds to the point of perforation and an extra-luminal cavity is formed, this cavity filled with barium and shown on the films is called an accessory pocket. Duodenal ulcer is frequently of the perforating type. A small percentage of penetrating ulcers result in such large, infiltrated masses that the stomach presents the so-called organic hour-glass appearance.

The three important indirect manifestations of gastric and duodenal ulcer are the incisura, the spastic hour-glass contraction, and the spasm of the pyloric segment of muscle causing six-hour retention in the stomach. The last one is the most common and the most important. The incisura is an indentation or drawing in of the circular muscle fibres in the same segment as the ulcer, and is usually caused by the irritation in the ulcerated area. The spastic hour-glass contraction is one in which a large segment of muscle is involved in the spasm and the appearance is that of an hour-glass. These forms of spasm are not relaxed by antispasmodics, but are loosened by anæsthesia and are not seen at operation.

Retention in the stomach of one-eighth or more of the contrast meal for a period of six hours means trouble somewhere in the abdomen, and the most common causes are ulcer of the stomach or duodenum and carcinoma of the stomach. This form of gastrospasm is an every day occurrence. Hyperperistalsis is an increase in the number, rather than in the depth, of the peristaltic contractions. Two fairly deep peristaltic waves are not abnormal, but three or four vigorous waves are considered worthy of note.

The normal position of the most advanced portion of the barium meal at the six-hour interval is any place from the terminal ileum to the hepatic flexure of the colon. If the head of the meal is at the splenic flexure in six hours it is travelling faster than normal, and is said to be hypermotile. This hypermotility is an evidence of irritation at some point where part of the meal has passed. It may, for instance, be a diseased appendix, or a tuberculous cæcum, or a duodenal ulcer. Duodenal ulcer setting up a hyperperistaltic condition of the stomach is the most common cause.

Summing up the above, it can be stated that if a niche, accessory pocket, or an organic hour-glass contraction is in evidence either in the stomach or duodenum, there is an ulcer present. The organic hour-glass of gastric cancer is a possible exception, but the type of deformity is different and should rarely be mistaken.

The value of the indirect or spastic signs depends, to some extent, on the patience, skill, and judgment of the examiner. Carmen states,[1] "A residue in the stomach with an unbroken contour, that is to say without any evidence of gastric ulcer or cancer, should first of all suggest duodenal obstruction, the most common cause of which is duodenal ulcer. If in addition to the gastric retention there is a gastric hyperperistalsis the presence of a duodenal ulcer is practically certain." Again he states,[2] "When any form of gastrospasm exists after belladonna has been given to physiological effect, the existence of an intrinsic lesion is fairly proven, and most often that lesion is ulcer."

The indications for and the value of the gastro-intestinal x-ray examination are now generally recognized, and it would seem unnecessary to spend any time on this phase of the subject. Speaking of gastric ulcer, Sir Berkely Moynihan states,[3] "Of all ancillary methods of diagnosis that of the radiologist should be of the greatest value. In the diagnosis of gastric ulcer it has pride of place; in competent hands it is far more accurate than any other methods of diagnosis, clinical or chemical, or all other methods combined. It is, indeed, so trustworthy that unless a diagnosis of gastric ulcer made on clinical evidence is confirmed by the radiologist it should

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rarely, if ever, be accepted. There are, indeed, only two certain and unequivocal methods of making a diagnosis of gastric ulcer—that of the radiologist and that of the surgeon. Unless a gastric ulcer is seen we can never be quite confident of its presence. We must walk by sight and not by faith." On the following page, in the same article, he states, "Deformities of the duodenal bulb are as certain an indication of ulcer as are the niche and notch in cases of gastric ulcer."

In conclusion, I would state that if my experience with the series of examinations mentioned above has taught me anything it is that x-ray examination of the gastro-intestinal tract is a component part of the symptom and sign group that go to make the diagnosis of gastric or duodenal ulcer. I do not agree with the physician or surgeon who states "I have made a diagnosis of gastric ulcer and I am referring the patient for x-ray confirmation." I am convinced that the time has arrived when a diagnosis of ulcer should seldom be made without all the evidence, and that the x-ray report is an essential part of that evidence.

REFERENCES

1. CARMEN, R. D., The Roentgen Diagnosis of Diseases of the Alimentary Canal, W. B. Saunders Co., page 481, 1917.
2. *Ibid.*, page 292.
3. MOYNIHAN, SIR B., Two Lectures on Gastric and Duodenal Ulcers, Wm. Wood & Co., New York, 1923, page 10.
4. DICKSON, W. H., *Canad. M. Ass. J.* **16:** 1054, Sept. 1926.

THE ACUTE APPENDIX*

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I MAKE no apology for this contribution to the already voluminous literature on acute appendicitis, as operations for this disease constitute an important part of the work of every general surgeon and accounted for one-sixth of all the major operations in the Hamilton General Hospital in 1928. Moreover, the disease carries with it a considerable mortality. Quain and Waldschmidt[1] report a series of 1,000 cases with a mortality of 2.5 per cent. In 1928, in the Hamilton General Hospital, there were 239 operations for acute appendicitis with a mortality of 2.3 per cent.

This paper is based on a series of 136 consecutive cases operated upon by the author during the past few years without any mortality. Every case included showed definite, visible, macroscopic evidence of an acute pathological condition, and was confirmed by laboratory examination.

An analysis of these cases discloses some interesting facts. First, as regards the time of operation, we find that 55 per cent came to operation within 24 hours of onset; 16 per cent between 24 and 48 hours of onset; 28 per cent after 48 hours, some of the latter being delayed 72 hours and longer, so that it is evident that they were not all early cases.

It is also of interest to note the frequency of occurrence of some of the commoner symptoms. Typical pain began in the epigastrium and later localized in the right iliac fossa in 87 per cent. Pain began primarily in the right iliac fossa in 13 per cent. Vomiting occurred in 47 per cent. Nausea occurred in 11 per cent.

The location of tenderness was as follows: at McBurney's point in 94 per cent; absent over McBurney's point in 5.5 per cent; in the loin in 1.8 per cent; abdominal tenderness entirely absent (per rectum only), 3.7 per cent.

The position of the appendix showed the following variations: medial or subcæcal, 53 per cent; retrocæcal, 24 per cent; pelvic, 21 per cent; high under liver, 2 per cent.

It is not the intention in this paper to attempt to deal exhaustively with the whole subject of acute appendicitis, but rather to stress the atypical case, and to call attention to certain practical points in diagnosis and treatment, as illustrated in this series of cases.

The typical case—presenting the classical picture of pain beginning in the epigastrium or

* Read before the Ontario Medical Association, May 31, 1929.

about the umbilicus and later localizing in the right iliac fossa, with vomiting shortly after the onset of pain, with tenderness over McBurney's point, and rigidity of the lower right quadrant —this characteristic syndrome requires little skill for its diagnosis. However, this picture is by no means always present. As noted above, pain began primarily in the right iliac fossa in 13 per cent of this series, 50 per cent did not vomit, and in 3.7 per cent there was complete absence of abdominal tenderness.

Atypical appendicitis is seen chiefly in two groups of cases: (1) those occurring as the result of, or in association with, some other disease, *e.g.*, pneumonia, pharyngitis or gastro-enteritis; (2) those developing in an appendix which occupies an abnormal anatomical position, *e.g.*, retrocæcal or pelvic.

Regarding the first group, there were 7 cases which developed during respiratory infections as follows: 1 with influenzal pneumonia; 5 with influenza and bronchitis; 1 with pharyngitis.

The greatest difficulty in diagnosis was experienced in the case with pneumonia, as we realized the frequency with which pneumonia is associated with abdominal pain, and the ease with which acute abdominal lesions are simulated by this disease. However, in spite of the presence of a definite pneumonia, we were enabled to make the diagnosis of appendicitis on the strength of definite and persistent tenderness over McBurney's point, and a gangrenous appendix was removed.

Other cases which cause difficulty are those associated with diarrhœa, as here gastro-enteritis may be diagnosed and the appendix overlooked, especially if abdominal tenderness is vague or indefinite. This point will be referred to again later.

The second large group of atypical cases, occurring in appendices occupying an abnormal anatomical position, may be divided into subgroups as follows: (1) appendix on the left side (none in this series); (2) high or sub-hepatic appendix, constituting 2.3 per cent of this series; (3) retrocæcal, 24 per cent; (4) pelvic, 21 per cent.

As there was no case of left-sided appendix, due to total failure of the intestine to rotate, I will not dwell on this type of case, but simply call attention to the fact that it may occur.

The high or sub-hepatic group, in which the cæcum had failed to descend into the right iliac fossa, made up 2.3 per cent of my series. In all of these cases, some gall bladder lesion was suspected before operation. In one case the appendix literally had to be clipped away from the under surface of the liver.

The retrocæcal appendix, comprising 24 per cent of this series, did not present any serious difficulty in diagnosis, as with two exceptions there was definite tenderness over McBurney's point. In one of the exceptional cases the tenderness lay in the loin and did not appear over McBurney's point for 48 hours, at which time a gangrenous appendix was removed. The other patient, according to his doctor, never had any tenderness over McBurney's point, but it lay entirely over the postero-lateral region of the loin. When he was brought in I found a mass extending well above the crest of the ilium in the flank. The white blood cell count was 26,000 per c.mm.; temperature 101°; and the urine, negative. Probable retrocæcal appendix abscess was diagnosed, and a necrotic appendix removed from a very high retrocæcal position.

The acute appendix occupying a pelvic position is probably the most difficult and elusive from a diagnostic standpoint, and occurred in 21 per cent of my series. There were five cases which showed absolutely no tenderness whatever on abdominal palpation. The diagnosis in these was made by rectal examination, which disclosed tenderness and sometimes resistance on the right side. In one case, the physician who called me informed me over the telephone that his patient had all the symptoms of an acute appendix except the tenderness. On obtaining a typical history and finding no tenderness on abdominal palpation, I made a rectal examination and could feel a very tender structure, resembling a finger, lying alongside the rectum on the right side. A pelvic appendix was diagnosed, and at operation a gangrenous appendix the size of a wiener sausage was removed from a low pelvic position. In certain cases rectal examination is our sole guide in making a diagnosis, and in others, where the symptoms are vague and indefinite, is a means of converting a doubtful diagnosis into a certainty. I cannot over-emphasize the importance of making a rectal examination in every case of abdominal pain.

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The differentiation of the pelvic appendix is further complicated by the frequent presence of symptoms referable to other pelvic organs, such as diarrhœa and frequent and painful micturition, due to irritation of the lower bowel and bladder respectively. In my group, diarrhœa occurred in only four cases and in the absence of marked abdominal tenderness it can be readily understood why gastroenteritis may be diagnosed and the appendix overlooked in these cases. Here again, rectal examination is the key to diagnosis.

Painful and frequent micturition was present in six of my cases and pus was found in the urine in one case. (A microscopic examination of the urine will usually exclude disease of the urinary tract). This finding of pus in the urine so complicated the diagnosis that the attending physician failed to suspect the appendix until some time had elapsed. On making a rectal examination, I discovered a mass and marked tenderness on the right side, and accordingly diagnosed a probable acute pelvic appendix with abscess, and advised operation. A pelvic abscess was found and drained, and a very necrotic and perforated appendix removed. Urinary symptoms, and even pus in the urine, do not always mean pyelitis in a case of right-sided abdominal pain. They may be caused by an inflamed appendix adherent to the bladder, or by a pelvic abscess, or the pus may simply be due to an old chronic cystitis. Rectal examination will establish the diagnosis in these cases.

Lastly, the differentiation between an acute pelvic appendix and salpingitis in the female may present serious difficulties, as the infection in the case of a pelvic appendix may travel across the pelvis and extend above the brim on the left side, giving rise to that bilateral tenderness so characteristic of salpingitis. One case of pelvic appendix was treated for two weeks on the mistaken diagnosis of salpingitis, but was finally drained, with removal of the appendix. In two other cases, not included in this series, operation was performed for an acute appendix and salpingitis found. The history of exposure, or the presence of an intact hymen, the presence of vaginal discharge, and the finding of gonococci in the cervical smear are valuable circumstantial evidence, but rectal and vaginal examination are the most certain means of differentiation. On rectal examination marked tenderness on the right side usually means a pelvic appendix. On vaginal examination sharp pressure on or jolting of the cervix will elicit marked pain if salpingitis is present. One does not expect to feel masses in the acute early case of salpingitis, but usually some fixation of the uterus can be elicited, and I consider the findings on rectal and vaginal examination the most valuable aids in making the diagnosis.

Before concluding, a few words may be said regarding treatment. It is well recognized that the secret of success is early operation. I think that the doctrine of delayed operation in late cases, which we see advocated so frequently nowadays, has dangerous possibilities, especially if not thoroughly understood. The time element is no criterion on which to base our decision to operate, and to say that after forty-eight hours or any other arbitrary time period treatment should be non-operative is a fallacy. We frequently find more advanced disease in a case operated upon within six hours of onset than in one removed after forty-eight or even seventy-two hours; or, to put it differently, operation may often be as safely performed after forty-eight hours as during the first twelve hours.

The rapidity of the progress of the disease is controlled by the relative virulence of the infection and the resisting power of the patient, and not solely by the time which has elapsed, important as this undoubtedly is. The condition of the patient should be the sole guidance in making our decision to operate. Beyond doubt, certain late cases with marked toxæmia, general peritonitis and distension, are better treated conservatively, as operation would certainly be fatal, but in the vast majority, operation as soon as the diagnosis is made is the safest policy in my opinion. This was the practice in every case in my series of 136 cases with no mortality.

However, the type of operation and the technique employed are important factors in determining the mortality. I believe strongly, with Deaver, that a lateral approach, closely following the right lateral wall of the abdomen, should be employed, and for this I strongly favour the McBurney incision. Pus is aspirated by the suction apparatus as soon as it appears. Coils of small intestine are gently packed aside with a moist tape if they appear. Adhesions are left undisturbed and intact as far as possible, only those which bind down the appendix being separ-

ated. Care and gentleness are observed throughout.

It has been argued against the McBurney incision that a low-lying pelvic appendix cannot be reached through it. In many cases the appendix and cæcum can be drawn out through

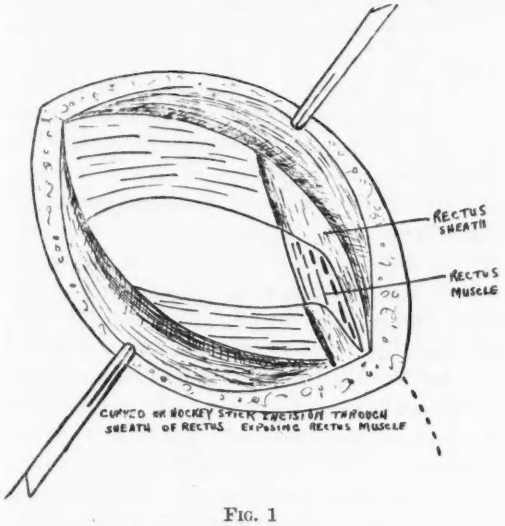

FIG. 1

the wound and the whole operation conducted outside the abdomen. If not, the gentle liberation of adhesions binding down the appendix may render this possible. In a small percentage of cases, however, it may be difficult or impossible to reach an appendix adherent low in the pelvis. Here the McBurney incision may be readily extended, as illustrated in the accompanying figures. There is nothing new in this method, but it seems to be unfamiliar to many.

It seems unjustifiable to use the Battle incision as a routine for this small percentage of cases, as dragging up a dirty appendix amid coils of uninvolved small intestine, or mopping up pus through uncontaminated peritoneum, is a violation of surgical principles. The Battle, or rectus, incision should be used only when the diagnosis is in doubt, as the right lateral approach is a very important factor in keeping down the mortality rate in these cases.

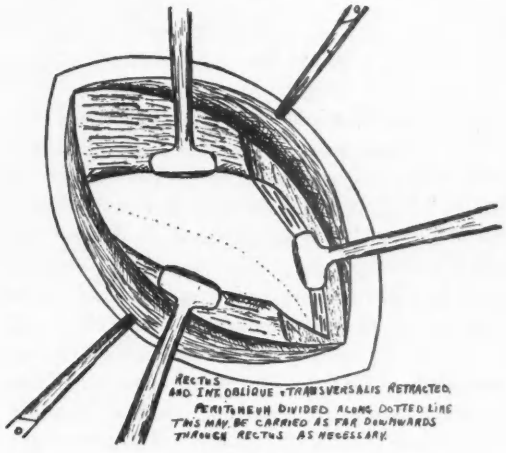
RECTUS AND INT. OBLIQUE + TRANSVERSALIS RETRACTED
PERITONEUM DIVIDED ALONG DOTTED LINE THIS MAY BE CARRIED AS FAR DOWNWARDS THROUGH RECTUS AS NECESSARY

FIG. 2

SUMMARY

In conclusion, I would summarize as follows:

1. The typical clinical picture is by no means always present, and we must be prepared to recognize deviations from normal.

2. Rectal examination is of primary importance in the diagnosis of many cases of pelvic appendicitis, and should never be omitted in any case of abdominal pain.

3. I would stress the value of the McBurney incision and call attention to a valuable method of making it available for all cases of appendicitis.

REFERENCE

1. QUAIN, E. P., AND WALDSCHMIDT, R. H., *Arch. Surg.* **16:** 868-878, April 1928.

"And of those things which are incumbent on the student of this Art are that he should constantly attend the hospitals and sick-houses; pay unremitting attention to the conditions and circumstances of their inmates in company with the most acute professors of Medicine; and enquire frequently as to the state of the patients and the symptoms apparent in them, bearing in mind what he has read about these variations, and what they indicate of good or evil. If he does this, he will reach a high degree in this Art. Therefore it behoves him who desires to be an accomplished physician to follow closely these injunctions, to form his character in accordance with what we have mentioned therein, and not to neglect them. If he does this, his treatment of the sick will be successful; people will have confidence in him and be favourably disposed towards him, and he will win their affection and respect and a good reputation; nor withal will he lack profit and advantage from them. And God Most High knoweth best."—Haly Abbas.

"It is impossible to find a good physician who is not at the same time a good physiognomist."—J. C. Lavater.

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A CASE OF PEDUNCULATED CARDIAC THROMBOSIS ACCOMPANIED BY AN AORTIC,, RENAL, AND MESENTERIC THROMBOSIS*

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ALTHOUGH much has been written concerning pedunculated cardiac thrombi, comparatively few cases have been reported, Scholtz in 1914 finding only 12 cases in the literature. As the condition is so rare and as, in addition, the following case presented such interesting embolic and thrombotic phenomena, it is deemed worthy of presentation.

Mrs. C. B., aged 33 years (No. 2963-28) was admitted on May 28, 1928, to the service of Dr. C. P. Howard at the Montreal General Hospital.

Complaints.—Heart trouble; pain in the right foot and leg; coldness and blueness of the right foot.

Family History.—Irrelevant.

Personal History.—She had suffered from measles and whooping cough in childhood. Until the age of nine years she had been subject to frequent attacks of tonsillitis. A tonsillectomy was then performed and she had had no further trouble with her throat. She had never had acute rheumatic fever, chorea, scarlet fever, diphtheria or any of the other acute infections. She was always a delicate child and at the age of twelve years began to suffer from cardiac attacks, characterized by præcordial pain, dyspnœa and palpitation; but not accompanied by swelling of the feet. These attacks at first were frequent, but later became less so and she was eventually able to secure a position as a stenographer, at which she worked regularly until her marriage in 1925. The appetite was always small; the digestion good, except for slight constipation. The menstrual periods began at the age of fifteen and were always regular and painless. There had been no pregnancies.

History of the Present Illness.—About April 25, 1928, she was forced to go to bed, owing to the recurrence of one of her cardiac attacks. In addition to præcordial pain, dyspnœa, and palpitation, she complained of pain of a cramp-like character in the right foot and behind the right knee. Once too she had had transitory pain in the left foot. She denied having had any fever, sweats, or sore throats, and this was confirmed by her doctor. On May 13th, she was seen by Dr. C. P. Howard at her home, as she had had a sudden heart attack during which she lost consciousness. She was found in a pulseless condition, and had an apparent weakness of the right side of the face and a very much dilated right pupil. The heart was much enlarged and was fibrillating. The blood pressure was 102 systolic; the diastolic could not be read. She was given digitalin gr. 1/100 and morphia gr. 1/4, with such good effect that next morning she appeared to be in no distress, but she complained that the pain in the right foot and leg was worse. The face was symmetrical, the pupils equal, and the cranial nerves showed no evidence of paralysis. The fundi were clear. There were some remains of tonsillar tissue in the throat. The thyroid gland was not enlarged and there was no special pulsation visible in the neck. There was no lymphatic adenopathy. Over the tarsus of the right foot was a slight redness and it was slightly tender to palpation. None of the joints showed any changes. The skin was free from petechiæ and ecchymoses. The lungs were clear throughout to percussion, but a few medium moist râles could be heard over the bases. There was a slight præcordial fullness, but with no definite systolic retraction of the interspaces. The point of maximum impulse was best felt in the fifth interspace, 14 cm. from the mid line. No shock or thrill was felt. The relative cardiac dullness began at the second rib above and extended 16 cm. to the left and 2 cm. to the right of the midline. At

* From the Medical Clinic of Dr. C. P. Howard and the Pathological Laboratory of the Montreal General Hospital.

the apex the heart's action was rapid and irregular ,in spite of which a definite presystolic crescendo murmur and a blowing systolic were detected. The latter was transmitted to the axilla and back. The pulmonic second sound was accentuated. The pulse was small, irregular in force and rhythm, and was so rapid that it could not be counted. The blood pressure showed a systolic reading of 100 and a diastolic of 80 mm. of mercury. The abdomen presented nothing abnormal, excepting that the liver was palpable two fingers' breadths below the costal margin. The spleen could not be felt. The reflexes were all normal. The temperature was 98.2.°

Under digitalis her cardiac condition improved, but the pain in the right foot and leg persisted. On May 16th a dusky red desquamation of the skin over the foot and toes appeared. On May 19th the condition became much worse, the pain being very severe; sensation was impaired and inability to move the toes occurred; finally definite gangrene of the foot set in. On May 28th, after much persuasion, she came to the hospital. The gangrenous process had by then extended up to the calf of the leg. The pain was extreme, requiring morphia for its alleviation. On two occasions prior to admission the urine examination showed a trace of albumin and of sugar, but nothing was seen microscopically.

Both the patient and her husband said that there had been no sudden onset to the pain in the right leg, and at no time was there any nausea or vomiting. Both agreed, however, that the pain, coldness and blueness of the right foot became much worse on May 19th.

On admission on May 29th the patient was very ill, she was very pale and was obviously suffering much pain. The heart was still fibrillating, but to a less degree. It was still markedly enlarged and the presystolic and systolic murmurs at the apex were well heard. A blowing systolic murmur was also heard over the pulmonic area. The right foot and lower half of the leg were gangrenous. A faint pulsation was still felt in the femoral artery, but none was present in the popliteal. In the next three days the gangrene extended somewhat, the patient remained in great pain and was often delirious. Her temperature ranged between 98° and 100.2° Fahrenheit. The blood count revealed 3,850,000 red cells; 22,200 white cells; with hæmoglobin of 71 per cent (Hellige). The urine showed a trace of albumin and a few hyaline and granular casts, but no red blood cells. The blood urea, creatinine and sugar were all normal.

On June 1st, although it was considered practically hopeless, an amputation of the right leg through the middle third of the thigh was done. A thrombosis of the femoral artery was discovered which extended up to the site of operation. A fair amount of bleeding was noted from the profunda femoris. She stood the operation remarkably well, but on the following day a small area of bluish discolouration was noted over the skin of the left heel. The pulsations in the arteries of the leg and foot were well felt. From June 3rd to June 7th she progressed moderately well, although often irrational. The cardiac condition remained unaltered and there was no change in the left foot or leg.

On the night of June 7th she complained of a sudden severe pain across the whole lower abdomen. She was found in a state of collapse; the hands and feet were cold, the pulse barely palpable. A faint pulsation was detectable in the left femoral artery. There was extreme tenderness with some splinting over the whole lower abdomen, but nothing could be palpated. She was given morphine and next morning did not complain of any pain whatsoever. The pulsations in the vessels of the left leg and foot were well felt and there was no abdominal tenderness. A marked pulse deficit at the radial artery was noted, and digitalis was again administered. On June 9th she complained of some lower abdominal pain and, in addition, of pain in the left thigh, described as if something was pressing on it. The pulsations in the left foot and leg remained good and the area of discolouration had not increased. Until June 12th no change in the patient's condition was noted. She still complained of the pain in the left thigh and lower abdomen. The temperature ranged between 98° and 99.4° Fahrenheit. A blood count revealed 16,000 leucocytes. The urine on several occasions showed considerable albumin, a few hyaline and granular casts, and a few red blood cells.

On the morning of June 12th, she appeared

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much better and was inclined to be euphoric. That night about 8 p.m. she was suddenly seized with a very severe epigastric pain. The abdomen was so tender that she could not stand the lightest palpation. There was, however, but little splinting of the abdominal muscles. She was in a state of severe shock, the skin was cold and clammy, the face ashen grey in colour, and the pulse could barely be felt. She was given morphine with but little effect. The next day her condition remained the same, but she was practically unconscious. She was seen by several members of the staff, who agreed that she had had a mesenteric thrombosis. On reviewing the history of the case at this time, Dr. C. C. Birchard suggested the possibility of the patient having a ball thrombus in the left auricle of the heart. In spite of stimulants and intravenous glucosalines the patient gradually grew worse and died the next morning.

The clinical diagnosis was: rheumatic endocarditis, mitral stenosis and insufficiency, possible ball thrombus in the left auricle, gangrene of the right foot and leg (due to femoral embolism), infarcts of the kidney, mesenteric thrombosis. A straddle thrombosis of the bifurcation of the aorta was also suspected.

Pathological Protocol.—The body was that of a fairly developed, but poorly nourished, female. The right leg had been amputated at the middle third of the thigh. The sutures had been removed and the wound was gaping. Rigor mortis was slight. There was no œdema.

The small intestine, from the cæcum to the duodenum, was a bright red colour. The serosa was smooth and glistening. The cæcum presented a dull bluish green hue and one area about 4 cm. in diameter was dark green in colour. The vessels from the mesentery were congested and prominent. The general peritoneum was of a pearly grey colour. A small amount of pus was found in the pelvic cavity, which showed many polymorphonuclear leucocytes, but no organisms could be found. The appendix was retrocœcal but free.

The pericardial cavity contained about 100 c.c. of clear straw coloured fluid. The heart was enlarged and weighed 300 grams. The tricuspid valve measured 9 cm., the pulmonary valve 6.5 cm., the mitral valve 4.5 cm. and the aortic valve 5.6 cm.

The cardiac musculature was reddish brown in colour, of firm consistency, and presented no visible scars. On the coronary artery about 5 cm. from its origin was seen an atheromatous plaque about 4 mm. in diameter. The aortic cusps were thickened and scarred, measuring between 1 and 2 mm. in thickness. The mitral valve too showed great thickening and puckering of the cusps. A few calcified vegetations were present, but no recent vegetations could be found. The papillary muscles were hypertrophied and the chordæ tendineæ shortened, thickened, and hardened. The tricuspid valve showed some thickening of the cusps, while the pulmonary valve was normal.

The left auricular appendage was filled with a pinkish grey, corrugated, firm thrombus, which extended out into the auricle, measuring at its base 1.5 by 1.2 by 1 cm. It tapered into a fine thread-like process, to which at a distance of 6 cm. was attached a ball-shaped thrombus 2.8 cm. in diameter. The surface to which the pedicle was attached was greyish in colour, roughened, somewhat flattened, and of a firm consistency. The remaining portion was reddish brown, smooth, very firm, and formed about two-thirds of a sphere. A culture taken from the roughened upper surface revealed *streptococcus viridans.*

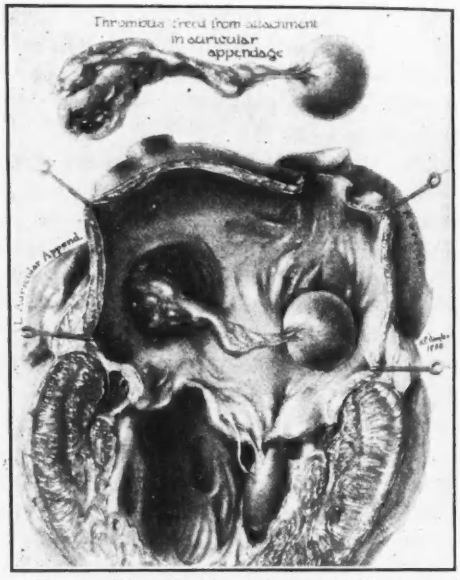

FIG. 1.—The left side of the heart laid open to show the stenosed mitral valve, the dilated auricle with the thrombus attached to the auricular appendage.

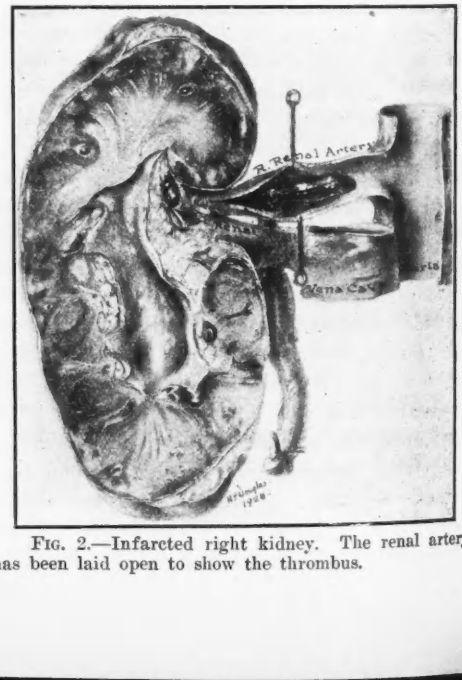

FIG. 2.—Infarcted right kidney. The renal artery has been laid open to show the thrombus.

In the aorta was a thrombus straddling the bifurcation and extending upwards for a distance of 1.5 cm. On the left, it extended down the whole length of the common iliac artery and for an undetermined distance into the external and internal iliac arteries. On the right side, it also extended the whole length of the common iliac artery, where it terminated, but about 10 cm. below this the thrombus was picked up in the femoral artery and extended down to the line of amputation. The thrombosis of the aorta and the iliac arteries was not complete, but that in the right femoral artery was total. The aorta showed many atheromatous placques throughout.

In the right renal artery, 1 cm. from the kidney hilus was a thrombus completely obliterating the lumen of the vessel.

At a distance of 12 cm. from its aortic origin the superior mesenteric artery was completely thrombosed for a distance of 3.5 cm.

The lungs were essentially normal, no areas of pneumonia or infarction being present.

The right kidney was of subnormal size and weighed 100 grams. The capsule was slightly thickened. It was bluish grey over some areas and reddish brown over the remainder. The capsule stripped easily, the exposed surface being finely granular. The kidney surface was roughened, pitted, and of variegated colours. On cut section the cortex was yellow for the most part, but the striæ were obscured by multiple small irregular areas of hæmorrhage. The medulla too was homogeneous, but with complete obliteration of the normal markings. The left kidney showed nothing abnormal.

The liver was large, weighing 1100 grams.

The spleen weighed 180 grams, was firm in consistency, and presented three or four small areas of infarction.

DISCUSSION

Cardiac thrombi. The occurrence of thrombi in the left auricle in association with mitral stenosis is a fairly common finding. These thrombi are usually confined to the auricular appendage, and it is surprising how rarely pedunculated and free thrombi occur.

The formation of these thrombi is due primarily to the stasis caused in the auricle by the mitral stenosis, plus some damage of the cardiac endothelium. The thrombosis, in a vast majority of cases, commences in the auricular appendage from which, occasionally, it extends out into the auricle. By the deposition of fibrin and blood the projecting portion gradually increases in size. Hewitt[1] points out that the fibrin will be deposited more rapidly on the projecting end than at its base, as the projecting end will lie in the main flow of the blood stream. He also states that "if the original projection is blunt with a pyramidal base the chances are that the polypoid thrombus will be oval and of large size; if it is slender it will probably be round and of small size." The fibrin being gradually deposited on the projecting end of a thin thrombus eventually assumes a rounded shape from the constant play of the blood stream on its surface. If the pedicle of this thrombus should become broken off, then a true ball-thrombus results. That this would have occurred in our case, if life had been prolonged, seems undoubted.

The invasion of the thrombus by *S. viridans*, while the stenosed mitral and aortic valves remained unaffected, is peculiar, and I do not find any analogous case in the literature. The presence of a subacute bacterial endocarditis was unsuspected, as in the absence of petechiæ and a palpable spleen, the moderate fever and leucocytosis were believed to be secondary to the gangrene of the leg and no blood culture was taken.

The diagnosis of polypoid or ball thrombi during life cannot be made with certainty, and it is worthy of note that one of our staff suggested the possible diagnosis of a ball thrombus in the left auricle. Von Ziemssen,[2] Bozzolo[3] and Battistini[4] have all diagnosed cases during life and give the following criteria on which their diagnosis were based: (a) the presence of the signs of mitral stenosis; (b) signs of grave obstruction to the circulation of the left heart; (c) extreme lability of the pulse of the peripheral vessels; and (d) frequent occurrence of areas of gangrene in the lower extremities. All these findings may however occur in a case of uncomplicated mitral stenosis, and it is only when they are present to a marked degree that the presence of a ball or pedunculated thrombus should be thought of. Abramson[5] believes these signs and symptoms are suggestive but by no means pathognomonic, and with him we concur.

That these thrombi, either ball or pedunculated, between which no clinical differentiation can be attempted, can exert a ball-valve action on the mitral valve, with sudden cessation of the circulation, has been a disputed point. From the findings of Scholz[6] in his review of the literature, and from Hewitt's investigations as to this possibility, it would seem that not only does this phenomenon occur but that it is fairly common. In connection with this I would like to draw attention to the sudden cardiac attack suffered by our patient two weeks prior to her admission. Although at rest in bed she was suddenly seized with severe cardiac symptoms and, when seen, appeared practically moribund. The next morning, however, she was found lying comfortably in bed and with

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no outward signs of any great cardiac distress. Although problematical, it would seem possible that this attack was due to a sudden temporary obstruction of the mitral valve. It is unfortunate that a more detailed history of her previous cardiac attacks was not obtained; but owing to the gravity of her condition, the history was of necessity curtailed.

Aortic thrombosis. Thrombosis of the aorta is a relatively common occurrence, and perhaps the chief interest in such a finding is in the determination of its etiology. The etiology is briefly as follows: (1) embolism; (2) disease of the aorta; and (3) stasis. Welch[7] and Hesse[8] in their series of cases found that embolism was the greatest etiological factor. Aubertin[9] on the other hand believes that an arteritis, either arteriosclerotic or luetic, is the chief factor. From a comparison of the large number of cases which at autopsy reveal severe arteriosclerosis of the aorta, with the very few cases showing an accompanying thrombosis, it would seem that an arteritis *per se* is a rare cause of aortic thrombosis. Stasis, too, cannot by itself result in a thrombosis, as Glenard and Baumgarten showed many years ago "that a stationary column of blood between two carefully applied aseptic ligatures will remain fluid for weeks." (Quoted from Welch[7]). In the combination of a diseased endothelium with slowing of the blood stream we have probably a very common cause of aortic thrombosis.

To again refer to Welch; in his series he noted the association of mitral stenosis with aortic thrombosis and in many cases no possible source of embolism could be discovered, and he felt that many of the cases, classified as embolic in origin, should rather have been typed as primary in nature. In conjunction with this, we would like to stress the fact that in our patient the aorta at autopsy showed marked atheromatous changes, although she was only thirty-three years old. We have not been able to discover whether atheroma of the aorta in cases of long-standing mitral stenosis occurs at an early age. If it is so, as in our case, an explanation of the thrombosis on the basis of an arteritis plus stasis would be logical. In our case, in spite of the obvious source of embolism, we believe that the thrombosis was most probably primary in origin.

The sudden increase in the signs and symptoms of circulatory obstruction in the right leg are explained by the autopsy findings, as obviously a portion of the iliac thrombosis must have become broken off and become lodged at a lower level in the femoral artery. The maintenance of a strong pulse in the arteries of the left foot and leg is peculiar in view of the autopsy findings, but Welch quotes Gendrin and Barie as having observed this phenomenon in several cases, which they explain on the basis of decreased tone in the arterial wall below the thrombosis, and state that at times the pulsations may be even larger than normal.

The presence of the straddle thrombus at the bifurcation of the aorta was thought probable, but, as the circulation in the left foot and leg was so well maintained, it could not be definitely diagnosed.

Renal artery thrombosis. Complete thrombosis of the renal artery is a rare occurrence and we could find only twenty-two cases reported in the literature. As these cases have been well reviewed from time to time by Halperin,[10] Aschner,[11] Falci[12] and McKenna,[13] we will not summarize the cases, but only give some of the most important points as regards the etiology and symptomatology.

The etiology is twofold; first embolism, and secondly damage to the renal artery, either by trauma or disease. Von Recklinghausen[14] has reported the only case due to trauma, which was found at autopsy in a boy who some days previously had had a severe fall. Another rare cause of thrombosis is seen in the case of Renoy[15] in which a girl while convalescing from scarlet fever was suddenly seized with severe pain over both lumbar regions, followed by anuria and death; both renal arteries at post mortem were completely thrombosed. Periarteritis nodosa was the cause in Manges and Baehr's case,[16] while Bartels' case[17] was due to an embolism following a tracheotomy for relief of a laryngeal diphtheria. The above cases, however, are curiosities, and in the majority of cases (15 out of 22) emboli in conjunction with rheumatic heart disease were the cause of the thrombosis, while in the remaining three cases, marked arteriosclerosis of the renal arteries was found.

The symptomatology of the disease, and that of any severe renal infarction not necessarily total, has been described as follows. The

patient in a majority of cases is seized with severe agonizing pain over the lumbar region, accompanied by nausea, vomiting and collapse. The pain occasionally radiates to the groin and genitalia. Tenderness and spasm of the overlying muscles occur, and, as Aschner points out, a very important feature is that at first the pain, tenderness, and muscular rigidity occur anteriorly, which may easily lead to a mistake in diagnosis. The character of the pain too is important, as from a maximum at the onset it persists for days, but gradually decreases in intensity. At no time does it tend to become colicy in nature. The pain is increased by pressure.

The urinary symptomatology is not striking, although there is usually an oliguria and in two cases an anuria occurred. The urinary findings are very variable. Albuminuria is, however, almost always present, but the occurrence of casts and red blood cells is very inconstant.

Halperin stresses the fact that obstinate constipation may attend these cases. Leucocytosis and fever are almost always present.

That the differential diagnosis is difficult is illustrated by the fact that Aschner's case was operated upon as a supposed perinephritic abscess. Makai[18] reports a case of renal infarction in a fused kidney, which was mistaken for appendicitis. In Hewitt's paper concerning ball thrombi there is reported a case which, in addition to having a ball thrombus in the left auricle, had a complete thrombosis of the right renal artery. This case has naturally been overlooked by the other reviewers and so is briefly reported here. A woman of 36 years was admitted to the hospital suffering from very severe pain in the right lower quadrant of the abdomen. This pain had commenced suddenly two days previously. She gave a history of an attack suggesting acute rheumatic fever some years before, and on examination a well marked mitral stenosis was discovered. The abdomen was slightly distended, the muscles of the right lower abdomen were in spasm, and there was marked tenderness. The urine boiled practically solid and revealed a few casts but no red cells. Temperature was 99.5° F. and the leucocytes 16,800 per c.mm. The diagnosis of appendicitis was made, and an operation performed which revealed nothing abnormal. She died a few hours later, and, at autopsy, the presence of a complete thrombosis of the right renal artery with necrosis was found.

The diagnosis in our case was not made, nor was it suspected, although it was thought probable that she had had a small renal infarct. There are three possibilities for the occurrence of the thrombosis; first, it may have occurred without symptoms sometime prior to death; secondly, it may have occurred simultaneously with the mesenteric thrombosis; and thirdly, the severe lower abdominal pain complained of by the patient six days before death may have marked the onset of the thrombosis. The first conjecture seems improbable, as the only two cases in the literature who failed to give any history of a sudden pain were suffering from marked arteriosclerosis and both died of uræmia. From the appearance of the infarct and kidney it would seem that the thrombosis was of longer duration than two days and therefore could not have occurred simultaneously with the mesenteric thrombosis. I am therefore inclined to believe that the unexplained abdominal pain occurring six days before death was due to the blocking of the right renal artery by an embolus.

As the diagnosis was unsuspected the urine output was not carefully watched so there is no record available to tell us whether or not there was an oliguria. The temperature did not show any rise but the urine did show albumin and casts and a few red blood cells.

Mesenteric thrombosis. There is no need to discuss mesenteric thrombosis, other than to say that, in such a patient, where there was evidence of marked rheumatic heart disease in which there had already been symptoms suggesting embolism, the diagnosis was not difficult.

REFERENCES

1. HEWITT, J. H., *Johns Hopk. Hosp. Rep.* **17:** 1, 1916.
2. v. ZIEMSSEN. H., *Verhandl. Kongress f. inn. Med.* **9:** 281, 1890.
3. BOZZOLO, C., *Riforma Med.* **12:** 98, 110, 1890.
4. BATTISTINI, F., *Gior. d. r. Accad. di med. di Torino,* 4 S., **15:** 313, 1909.
5. ABRAMSON, J. L., *Ann. Clin. Med.* **3:** 327, 1924.
6. SCHOLZ, T., *Ztschr. f. klin. Med.* **101:** 343, 1925.
7. WELCH, W. H., Allbutt's Syst. of Med. **6:** 185, 1899.
8. HESSE, E., *Arch. f. klin. Chir.* **115:** 812, 1921.
9. AUBERTIN, C., *Med. Press.* **124:** 221, 1927.

10. HALPERIN, G., *Arch. Int. Med.* **1:** 321, 1908.
11. ASCHNER, P. W., *Am. J. M. Sci.* **164:** 386, 1922.
12. FALCI, E., *J. d'urol.* **18:** 449, 1924.
13. MCKENNA, C. M., *J. Urol.* **19:** 411, 1928.
14. V. RECKLINGHAUSEN, F. D., *Virchow's Arch. f. path. Anat.* **20:** 205, 1861.
15. JUHEL-RÉNOY, E., *Arch. Gén. de Méd.* **157:** 385, 1886.
16. MANGES, M., AND BAEHR, G., *Am. J. M. Sci.* **162:** 162, 1921.
17. BARTELS. Cited from Halperin.
18. MAKAI, E., *Zentralbl. f. Chir.* **53:** 2597, 1926.

A SERIES OF URETERAL CALCULI TREATED BY MANIPULATION*

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IN this paper it is not my intention to enter into a discussion of the composition or causes of renal and ureteral calculi. I shall confine myself to a presentation of my findings and observations in a series of ureteral calculi treated by manipulation.

My series consists of 40 cases of calculus in the ureter, concerning 36 patients; two persons being treated for two different stones and one for three.

Twenty-one of these patients were male and 15 female. In 3 of the female cases the first onset of severe colic was a few days after a confinement.

The age incidence is younger than that usually given, probably on account of the low average age of the inhabitants of our locality. The youngest patient was 23 and the oldest 61. There were 12 patients under 29, 9 between 30 and 39, 9 between 40 and 49, 4 between 50 and 59, and two over 60.

The right side was involved in 23 cases and the left in 17. An interesting fact is that not one of these patients had had the appendix removed for the pain. I feel that this speaks well for the diagnostic ability of the men of our locality in general practice.

Thirty stones were in the lower ureter, seven in the mid ureter, and three in the upper ureter. Co-existing calculi were present in three cases. One patient had a large calculus in each kidney as well as one in the ureter. One patient had had a nephrectomy for pyonephrosis with calculi formation a short time before. One patient had a large bladder calculus. Three patients gave histories of having passed calculi earlier, and one of these had had a large calculus removed from the bladder forty years previously.

During the period of this series only four other cases of calculi were seen, two large kidney calculi, and two large ureteral. One of these I removed by open operation, and the other was removed elsewhere.

Bifurcation of the right ureter was detected twice. In one case the bifurcation took place just below the pelvis, and in the other just above the bladder.

The shadow of the calculus was detected by the x-ray in 35 cases. No shadow was detected on examination of the film before and after treatment in three cases representing five stones. These patients had typical attacks of colic, the obstruction was felt by the catheter and the calculus recovered in four, and was felt to pass in the fifth.

A few of the patients were seen in their first real attack of renal colic, but most gave a long history of pain and had lost count of the number of attacks.

Blood and albumin were very constant findings. The hæmaturia varied from gross hæmorrhage in two cases to a few cells detected only by microscopic examination. In only four cases were no blood cells found. Twenty cases gave a positive reaction for albumin.

The incidence of infection was low, only one severe case being encountered. This occurred during treatment and will be referred to later. Half of the cases showed a few pus cells, but only three needed treatment, (other than routine medication) for infection.

The diagnosis was made on the patient's history, (which was that of typical colic in all but

* Read before the Section on Urology, Canadian Medical Association, at the annual meeting in Montreal, June 19, 1929.

one case) combined with x-ray and urinary findings. The unusual case was one in which the patient had been complaining of a dull aching pain in the right side for some time. Her physician had a gall bladder condition in mind but wished her urinary organs checked up first. A cystoscopic examination revealed a bifurcation of the ureter with the stone in one branch just below the bifurcation. She was spared real attacks of colic by the patency of the other branch of the ureter.

A brief account of some of the most interesting cases is given herewith.

CASE 1

Male, aged 26, complaining of repeated attacks of right-sided colic for six months. He was cystoscoped at a large clinic and told that there was nothing wrong. X-ray showed a shadow near the middle of the ureter. Urine: albumin, trace; red blood cells, a few. Cystoscopy. The right side of the trigone was elevated and congested, the orifice retracted. An F6 catheter met an obstruction 8 cm. up, and, on being manipulated past, there was a steady flow of urine from the catheter. The ureter was dilated to F12. An F6 catheter was left in place for twenty-four hours. He passed the stone six days later. Moderate pyelitis. The pelvis was lavaged twice with 5 per cent neosilvol. There has been no trouble since.

CASE 2

Mr. C., aged 48, having repeated attacks of left renal colic. X-ray showed a shadow in the lower left ureter. He was cystoscoped during an attack of colic. The urine was under tension. The ureter was dilated to F12. He passed a stone four days later.

CASE 7

Male, aged 44, with attacks of colic every two to three days for nearly a year. X-ray showed a suspicious shadow in lower end of the left ureter. Cystoscopy. An F6 catheter passed; left in the ureter for twenty-four hours. One week later he passed the stone. Thirteen months later on he took an auto trip in the east and had severe colic. X-ray showed a shadow in the mid region of the left ureter. Open operation was advised. He returned home. Had two dilatations two weeks apart, and one week later passed the stone.

CASE 9

Male, aged 44. He suffered with attacks of colic about every hour for five days with marked vomiting. X-ray showed no suspicious shadows. Urine, negative. Cystoscopy. A very small orifice, marked œdema and inflammation around the left orifice. An obstruction was met 4 cm. from the orifice. The orifice was slit with scissors and the ureter dilated to F12. He passed a calculus two days later. In May, 1929, he reported no trouble since and has been in the best of health.

CASE 11

Male, aged 54. His first attack of colic occurred eleven years previously. He had had several attacks and passed a stone three years ago. This attack started October 3rd, and he had been in constant pain since with marked strangury. X-ray negative. Urine: albumin, trace; red blood cells a few; pus cells a few. Cystoscopy, October 11th. The left orifice was normal. The region of the right orifice was prominent. A catheter was passed up the ureter with difficulty. A stereo-x-ray, with catheter, showed no sign of a stone. October 12th, the catheter was removed. No pain. He passed a stone two days later. In May, 1929, he reported that he had passed a stone this month after a few mild attacks of pain.

CASE 14

Female, aged 41, who had suffered from attacks of colic associated with belching and headaches. She was treated as a gall-bladder case. X-ray showed a shadow in the region of the ureter opposite the 3rd lumbar vertebra. Two dilatations were performed a week apart. She passed the stone, which measured 0.8 x 0.6 cm. In May, 1929, she reported in excellent health.

CASE 15

Male. He had had renal colic almost continuously for a week before admission. X-ray showed a small calculus in the lower right ureter. January 31st, cystoscopy. Intense congestion found around the right orifice. Lower ureter dilated to F12. An F8 catheter was left in the ureter. The urine was under tension. Shortly after removal of the catheter, the next day, he had a burning sensation in the urethra and felt something pass while urinating. February 3rd. X-ray negative. On May, 1929, he reported having had no trouble since.

CASE 16

Male, aged 37. Two attacks of very severe colic, with passage of blood. Urine: albumin, negative; a small amount of blood. X-ray showed a suspicious shadow in the region of the lower end of the right ureter. Cystoscopy during the attack. The bladder was negative; very small orifices. An F6 catheter was passed by the stone and left in place for twenty-four hours. No pain. He was discharged. A few days later he passed an irregular calculus, 1.1 x 0.7 cm. May, 1929, he reported no further trouble.

CASE 24

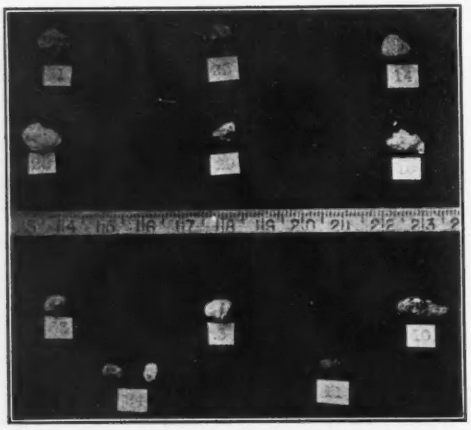
Male, aged 35. He had had seven different attacks of colic before admission. X-ray showed two shadows in the region of the lower end of the right ureter. Urine: albumin, marked; a few pus cells and red blood cells. Cystoscopy, July 8th. Congestion around the right orifice; left, normal. An F6 catheter was passed. An obstruction was felt and the catheter was left in the ureter for twenty-four hours. He passed one stone on the night of the 10th and another on the morning of May 11, 1929, he reported no trouble since.

CASE 28

Mrs. Z., aged 32. Her attack of colic occurred during her fifth pregnancy; several attacks during the year on the left side. Urine: albumin, plus plus; red blood cells, occasional. X-ray showed two shadows in the line of the upper left ureter. December 29, 1928, the left orifice was very small. An obstruction felt 13 cm. up the ureter. An F5 catheter was passed and left in the ureter for twenty-four hours; slight pain. January 4, 1929. The ureter was dilated to F8; the calculus was felt 8 cm. up the ureter. January 14, 1929. Ureter dilated; orifice to F10. A calculus was felt 5 cm. up the ureter. January 15, 1929, discharged. Three weeks after leaving the hospital, after slight pain, she heard the stone hit the toilet while urinating. One week later she passed a second stone painlessly. The stone measured 1.0 x 0.7 cm. May, 1929, she reported no symptoms.

CASE 29

Mr. S., aged 33. First attack of colic on the left side. X-ray showed a shadow in line with the third lumbar vertebra. Urine: a few red blood cells. Cystoscopy. The bladder was clear; a very small left orifice. The lower end of the orifice was dilated to F9. An F6 catheter met some obstruction well up the ureter and was eventually manipulated past. A very free flow of urine from the catheter followed. The catheter was left in the ureter for twenty-four hours. Five days later a severe attack of colic, with strangury occurred. Cystoscopy showed a stone partially protruding from the meatus. It was removed with cystoscopic forceps.



Showing some of stones recovered by this method. The rule is marked in centimetres.

TREATMENT

We are all agreed that many ureteral calculi will pass unaided, but we do not agree on the length of time they should be permitted to remain undisturbed. Calculi giving repeated attacks of pain may cause considerable destruction of kidney tissue, or may become so firmly imbedded in the ureteral wall that they are difficult to remove even by open operation. I believe there are three clear indications for manipulative interference: (1) infection (slight or moderate); (2) arrested progress, that is, a non-advancing stone, as shown by x-ray; (3) attacks of pain which cannot be readily controlled.

I depend on ordinary ureteral catheters, bulbs and filiforms, to dilate the ureter. I am, frankly, afraid of the metal inventions for grasping or loosening the stone. I have tried several times without succes the method advocated by Bumpus of inserting several filiforms around the calculus and withdrawing them together. On one occasion I had an F6 opaque catheter and five filiforms past a stone and after twisting them began to draw them out. There was considerable resistance, apparently indicating that I had secured the stone. I did not recover the stone and on inspecting my catheter found that it had been cut through at the eye. I could see no sign of the piece of catheter in the bladder and rightly presumed that it was in the ureter. I was much perplexed but succeeded in getting another catheter past the obstruction and with drainage from the kidney established, decided to wait and watch. The patient had some pain in the side the second night and during a bowel movement felt a twinge in his urethra. X-ray in the morning showed that both the stone and the piece of catheter had disappeared.

I feel that there is nothing to be gained by permitting a patient to suffer that worst of all pains, renal colic, and if morphine does not control the pain I advise ureteral dilatation. Believing that the most important factor in the pain is the tension in the pelvis, I concentrate on its reduction, that is to say, my first endeavour is to get a catheter of any size whatever past the offending stone. This is not always easy, but by repeated attempts, varying the size of the catheter and shape of the tip used, one is rewarded eventually with success. Two results are immediate. The first is the almost instantaneous relief from severe pain. Patients will express relief during the first few seconds after the catheter has passed the stone. The second is the relief from tension of the urine above the stone. The urine often pours from the catheter. I have recovered as much as three ounces from a distended pelvis and ureter. The procedure following the relief of tension varies with the existent conditions. Leaving the original catheter in position, I usually try to pass an additional one past the stone. If I am successful I rest content. In most of these cases, however, the ureteral orifices are so small that a second catheter will not enter. It is then necessary to remove the original catheter and insert catheters of increasing size, passing each one by the stone if possible. In seven cases only did I find it necessary to enlarge the ureteral orifice with scissors. In these cases the bleeding was negligible. A moderate amount of pressure can be used with safety on the catheters, which, with a rotary movement, aids their passage. My greatest difficulty has been with stones impacted in

the lower end of the ureter. Here it is hard to get enough of the catheter into the ureter to get much leverage. I have used both the bulb and tapered catheters as well. I find the tapered catheter of great value, especially in securing a good dilatation of the lower ureter. I try to secure a dilatation up to at least F10 and then insert a catheter well past the stone. This catheter is left in the ureter for twenty-four hours and then withdrawn.

Meanwhile the patient is given plenty of fluids. For medication I give twenty grains of potassium citrate and ten minims of tincture of belladonna every four hours. Morphine is rarely indicated. This is often all that is necessary. There is marked relief from pain and free drainage is established. On two occasions I have had the stone come away attached to the catheters and several have passed their stones a few hours after the withdrawal of the catheters.

A second dilatation is not given for several days, unless severe symptoms recur. If they do recur dilatations are repeated at four- to ten-day intervals, depending on the severity of the symptoms and the condition of the patient.

It is not necessary to hospitalize the patient constantly. Most cases requiring additional dilatations return to the hospital the morning of the treatment and leave the next day after the removal of the catheter.

Most women can be manipulated without anæsthesia. For men I have used general anæsthesia, caudal, and novocain in the urethra. Unless there are contra-indications I prefer general anæsthesia for the first manipulation. Caudal anæsthesia has not been satisfactory except in a few cases. For subsequent dilatations anæsthesia is rarely required.

INFECTION

Some writers have stressed the dangers of infection in connection with manipulative measures. While I admit the possibility of infection, I feel that it has been over emphasized. We are all familiar with the use of an indwelling catheter and of ureteral dilatations in the treatment of renal infections. We have in the method above described a means of treating ureteral stones even in the presence of a considerable degree of infection. Unless the infection present is of such a character that nephrectomy is the obvious treatment I believe that manipulation should be tried. In this series there was only one case, and that an early one, where additional infection may have been introduced. This patient's history is instructive. By a series of three dilatations the stone had been gradually persuaded down to a point near the meatus, when one day severe pain and a temperature of 104° developed. I immediately cystoscoped her, and, getting a catheter by the stone, obtained two ounces of foul-smelling urine. I then lavaged her pelvis with normal saline and neosilvol. This was repeated several times through the indwelling catheter and in a few days her temperature was normal and the infection under control. Some days later I slit the orifice but, failing to recover the stone, I decided to operate. As x-ray and examination had shown that the stone was just at the meatus, we went through the bladder and slit the orifice widely. No stone was found. The orifice was left wide open, the bladder sewn tightly, and drained by an indwelling catheter. Convalescence was uneventful. An x-ray showed no sign of the stone. It had been passed unnoticed between the time of the x-ray and the operation the next day. A year later this patient developed pain in the right side. Her physician felt that it was due to gall stones, but asked me to see her. I agreed with him, but asked permission to check up on her former trouble. The orifice had healed nicely; function was good; the pyelogram was satisfactory; and there was no evidence of infection. Operation confirmed the diagnosis of gall stones.

In another case, also early, operation by the inguinal route was performed. During demonstration of the stone, it was inadvertently pushed through the meatus into the bladder.

Among the lessons learned from these cases were, first, that even fairly large stones may pass undetected; and, second, that the only x-ray picture to be depended upon for locating a ureteral stone is one taken on the way to the operating room or, better still, on the operating table.

In this series the size of the stones varied from the size of a small split pea to slightly more than a centimetre in diameter.

Ureteral stones may become lodged in any part of the ureter. The majority, however, are found in the lower two inches. Stones become

lodged, either by a spicule of the stone catching in the ureteral wall or through the presence of a narrowed or strictured area. We find that these cases have poor kidney drainage, that many of them have very small ureteral orifices, and that many of them are hard to dilate. Pyelograms and ureterograms showed dilatation. Not many, however, were taken, because x-rays are expensive and with private patients cost must be considered; and, also, it was not felt advisable to inject the ureters when this was not essential for a diagnosis.

The number of dilatations was as follows:—

In	23	patients	1 dilatation
In	6	"	2 dilatations
In	6	"	3 "
In	2	"	4 "
In	1	"	5 "
	2	"	under treatment.

DILATATION

I feel that gradual dilating of the ureter will result in the permanent stretching of a stricture or narrowed area. This in itself aids in the passage of the stone. The catheter will often dislodge the stone from its attachment and may change its alignment, making passage easier. Several of our stones were of greater diameter than the dilatation secured, yet they passed with little discomfort. A stone may be pushed up into the pelvis of the kidney by the catheter, which happened in one case. The stone passed without much trouble some months later, wide dilatation having been secured in getting the release of one in the lower ureter.

I have not found injecting olive oil into the ureter above the stone to be of any particular value and have discontinued its use.

The stone may become impacted in the ureteral orifice. In these cases the pain and strangury are very marked. There were two such cases in which the stone was removed with cystoscopic forceps. In two cases the stone came away attached to the catheters when they were removed. In another case the stone was found in the bladder on a second examination and removed with forceps; in yet another the stone was picked out of the urethral meatus.

RESULTS

	Cases
The stone was recovered in	21
Passing confirmed by x-ray and cystoscopy in	10
Stone felt to pass in	6
No record of passing in	1
Under treatment	2

We have record of the passing of 37 of the 38 stones. The other patient reports that he has not felt the stone pass but has had no symptoms for months. Two patients are still under treatment at the time of preparing this paper.

AFTER TREATMENT

Only three patients had enough infection to justify local treatment. These kidneys were lavaged with normal saline and 5 per cent neosilvol solution. All patients were given hexamine, grs. v, t.i.d., for at least a month after passage of the stone. They were instructed to drink a large quantity of water and pay attention to the bowels. Suitable attention was given to foci of infection. The teeth of many of these patients were in poor condition.

RECURRENCES

We have already mentioned that two of these patients were treated for two separate stones and one for three. This last, a woman, writes that she has passed seven altogether. Three others have had recurrences, one renal, and two ureteral; these latter were passed without assistance.

SUMMARY

1. Ureteral stones, whether single or multiple, and up to at least one centimetre in diameter, may be safely treated by dilatation.

2. Ureteral dilatation will result in the passage of most of these stones.

3. The danger of infection is over-emphasized.

4. Dilatation will relieve strictures and other obstructive causes.

5. As recurrence is fairly frequent, assisting the passage of the stone by manipulation is a safer and more rational procedure than open operation with the risk of a post-operative ureteral stricture.

6. Dilatation and manipulation is in line with the trend towards conservation of renal function.

TROIS ANNÉES D'EXPÉRIENCE A LA CRÈCHE D'YOUVILLE, DE MONTRÉAL.*

PAR DR. DANIEL LONGPRÉ,

Chef du service des nourrissons à la Crèche D'Youville,

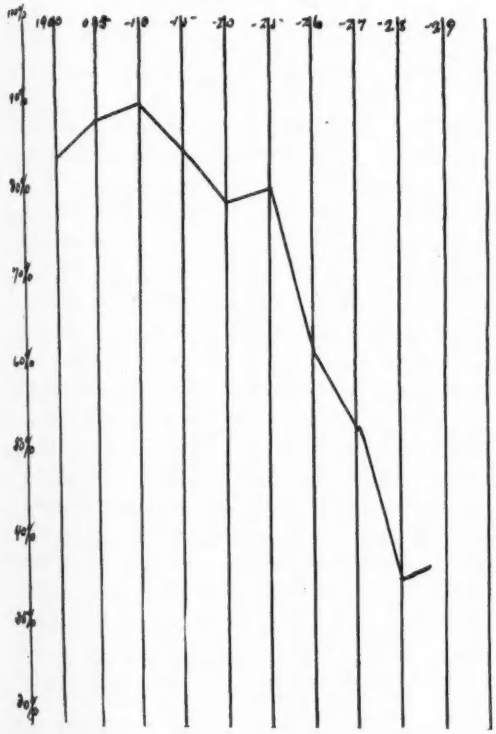
Montréal

DANS son rapport annuel pour l'année 1924, le Dr. S. Boucher, directeur du service de la Santé Publique de la ville de Montréal, prétendait que si on faisait abstraction, dans nos statistiques, des chiffres concernant les enfants illégitimes, le taux de la mortalité infantile de la ville de Montréal serait, par ce seul fait, abaissé de 142 à 112 pour 1000.

Comme, chez nous, les enfants illégitimes, à peu d'exception près, sont tous hospitalisés dans nos crèches, grandes crèches publiques comme la Crèche d'Youville ou petites crèches privées ou maisons de pensions pour nourrissons, les paroles du Dr. Boucher nous font voir jusqu'à quel point il est important pour nous d'étudier et de résoudre au plus tôt le problème des crèches.

GRAPHIQUE

Taux de Mortalité: Crèche d'Youville
De 1900 à 1928.



On peut voir par le graphique No. 1 que de 1900 à 1925 le taux de la mortalité de la Crèche d'Youville n'a pratiquement jamais baissé plus bas que 80 pour cent pour les enfants de 0 à un an. Or, si on pense que même dans ce temps-là la Crèche d'Youville était peut-être la mieux équipée et la plus scientifiquement administrée de toutes les institutions du genre du Canada français, on a le droit de se demander quel était le chiffre de la mortalité des autres crèches de la province de Québec. Je n'ai pas l'intention de démontrer que la lutte contre la mortalité infantile doit se faire, chez nous, exclusivement dans les crèches, loins de là. Mais comment peut-on espérer avoir un taux de mortalité infantile aussi bas que celui de certaines villes américaines qu'on nous cite en exemple, et dont les institutions analogues aux nôtres ont un taux variant de 5 à 8 ou 10 pour cent, quand, chez nous, trois ou quatre grandes crèches où on admet 700 nourrissons par année, et une couple de cents pouponniéres privées ont un chiffre de mortalité d'au moins 75 pour cent par année? Si je cite ces chiffres, c'est tout simplement parce qu'ils sont nécessaires à la compréhension et à la solution de ce vaste et complexe problème qu'est le problème des crèches. Mais il ne faut pas croire tout de même que les crèches canadiennes-françaises soient les seules qui, de tout temps, aient montré des statistiques aussi déplorablement élevées. Les crèches américaines étaient, il n'y a pas si longtemps, dans le même état que les nôtres, et le Montreal Foundling and Baby Hospital, qui est aujourd'hui, si je suis bien renseigné, l'institution la mieux administrée au monde et dont le taux de mortalité se maintient depuis quelques années à moins de 5 pour cent, tout en n'hospitalisant que des enfants illégitimes et privés de nour-

*Read on June 20, 1929, at the Sixtieth Annual Meeting of the Canadian Medical Association, before the Section of Public Health.

rices; or cette crèche canadienne anglaise de Montréal avait, il y a à peine dix ou douze ans, un taux de mortalité s'élevant jusqu'à 75 pour cent.[1] Plus récemment, M. Lesné,[2] de France, ne prétendait-il pas que la mortalité des nourrissons hospitalisés s'élevait encore à 35 pour cent. Or, quand on pense à la minutieuse organisation scientifique des crèches françaises, où, de plus, la plupart des enfants, même les enfants illégitimes, y entrent avec leur mère et y reçoivent l'allaitement maternel auquel ils ont droit, peut-on être surpris des statistiques de nos crèches où pour ne pas parler d'autre chose, l'allaitement maternel est forcément inconnu? Nous ne sommes donc qu'une dizaine d'années en retard sur nos voisins, et, si nous hâtons, nous devancerons probablement nos lointains amis, au moins quelques-uns d'entre eux, car un grand nombre de crèches françaises n'ont que 4 et 5 pour cent de mortalité infantile.[3]

Si la solution, si importante pour nous, du problème des crèches est en retard dans la Province de Québec, c'est tout probablement parce que nous nous sommes laissés hypnotiser par les déclarations pessimistes de savants étrangers prononcées il y a quelques années, dans le temps où, précisément, le problème paraissait insoluble, tellement insoluble que le monde médical le plus averti semblait alors croire que les nourrissons hospitalisés mourraient à peu près tous d'une maladie unique à laquelle on avait donné le nom de "Maladie des Crèches."

Les observations sans nombre que nous avons faites depuis trois ans à la Crèche d'Youville nous ont amenés à des conclusions nombreuses, mais surtout, nous sommes aujourd'hui en mesure d'affirmer: premièrement, que les nourrissons hospitalisés dans une institution ne meurent pas d'une maladie qui soit propre à cette institution, et que la maladie des crèches, en tant qu'entité morbide, est un mythe; deuxièmement, que les crèches ne diffèrent, en somme, du milieu familial que parce qu'elles constituent une agglomération où les individus, tout particulièrement susceptibles, sont plus souvent exposés aux dangers des différentes maladies infectieuses et contagieuses; troisièmement enfin, que, aujourd'hui que l'on comprend parfaitement le problème alimentaire infantile, les statistiques des crèches dépendent exclusivement des mesures qui seront prises contre toute une série de maladies dites évitables, telles que la diphtérie sous différentes formes, la rougeole, la coqueluche, la scarlatine, l'influenza et quelques autres.

Ce serait tout de même une erreur grave, parce que ce serait aller à l'encontre des faits, de prétendre que le problème gastro-intestinal n'existe pas ou n'existe plus chez les enfants hospitalisés. Au contraire il existe. Et même si la gastro-entérite, ou tout ce que l'on croyait autrefois être de la gastro-entérite, paraît être disparue de chez nous, elle reste quand même comme une menace constante qui tient le personnel médical et hospitalier sur le qui-vive, dans la crainte de voir se déclarer une de ces épidémies meurtrières de dysentérie qui décimaient, il y a quelques années, une grande partie de la population infantile de la Crèches d'Youville. Mais le point est celui-ci. En dehors, au dessus du problème alimentaire, il existe un problème qu'il faut absolument résoudre si on veut abaisser le taux des statistiques des crèches canadiennes-françaises, c'est le problème infectieux. On n'a jamais, je crois, insisté assez sur ce côté fort important de la question. On peut constater par le graphique No. 1 que le taux de mortalité de la Crèche d'Youville a été abaissé considérablement du premier janvier 1926 au premier janvier 1929. Or bien que nous n'ayons pas eu à enregistrer un seul cas de décès par choléra infantile depuis deux ans au delà, et bien que le nombre de décès dûs à des troubles gastro-intestinaux ait été réduit à un minimum (22 en 1928 contre 250 en 1925), le taux de notre mortalité n'est pas descendu plus bas que 36 pour cent. Bien plus, on peut également constater par le même graphique que nos statistiques ont tendance à remonter un peu cette année. Cet arrêt et le commencement d'ascension de la courbe de notre mortalité sont dûs à ce qu'il nous a été impossible de débarrasser la Crèche d'Youville des maladies infectieuses diverses, dont l'issue la plus fréquente chez les nourrissons, est, comme on sait, une complication des organes respiratoires. En 1928 une quarantaine de nos décès sont survenus chez des prématurés débiles, dont un bon nombre auraient pu survivre s'ils n'avaient pas en à souffrir, commes les autres enfants de l'institution, d'une infection des voies respiratoires.

En résumé, la "Maladie des Crèches," c'est l'ensemble des maladies congénitales ou acquises, dont souffrent et dont meurent les enfants hospitalisés; la débilité congénitale, les troubles

gastro-intestinaux, les maladies infectieuses en général, les maladies des organes respiratoires en particulier, et quelques autres. A cela il convient d'ajouter quelques maladies qui, sans être fatales en soi, prédisposent l'enfant à d'autres infections plus graves en l'affaiblissant, ou qui, sans comporter quelques gravité que ce soit, entravent le travail du personnel, et constituent le sable dans l'engrenage.

Nous allons étudier en détail les causes de décès pour l'année 1926, date à laquelle le personnel de la Crèche d'Youville a commencé à s'organiser. (Voir Tableau).

TABLEAU

Causes des Decès Pour l'Année 1926, à la Crèche d'Youville

DÉBILITÉ CONGENITALE:
(a) Dûe à accouchement provoqué;
(b) Dûe à des malformations congénitales;
(c) Dûe à la syphilis héréditaire.

DIARRHÉES:
(a) Diarrhées non-infectieuses;
(b) Diarrhées infectieuses:
  (a) Diarrhées infectieuses franches;
  (b) Diarrhées infectieuses symptômatiques.

Bronchopneumonies dûes à:
(a) Rougeole;
(b) Coqueluche;
(c) Influenza;
(d) Rhino-pharyngites;

Autres causes:
(a) Diphtérie;
(b) Scarlatine;
(c) Méningites;
(d) Varicelle;
(e) Erysipèle;
(f) Vulvo-vaginites gonococciques;
(g) Abcès multiples;
(h) Rachitisme et tétanie.

Toutes ces maladies constituent ce que l'on a appelé "Mal des Crèches."

Maladies soulignées d'un trait, celles dont nous nous sommes débarassés, mais qui sont sujettes a révenir; de deux traits, celles dont nous nous sommes débarassés definitivement; de trois traits, celles qui existent encore à l'état endémique.

PRÉMATURÉS DÉBILES

Le "birth control" n'as pas chez nous la popularité qu'il semble avoir ailleurs. Les lois civiles et surtout les lois religieuses défendent l'avortement provoqué. La plupart des jeunes filles n'osent pas enfreindre ces lois, et très peu de médecins, en somme, se livrent à l'exercise de cette pratique médicale criminelle. Mais, pour sauver une réputation, on a trouvé moyen de contourner les difficultés légales ou morales, on n'avorte pas mais on provoque un accouchement avant terme vers le sixième ou septième mois. C'est ce qui explique le nombre relativement élevé de prématurés débiles que nous relevons dans les crèches, telles que la Crèche d'Youville. Je ne me sens pas le courage de m'élever contre cette pratique, parce qu'en somme, la réputation d'une jeune fille vaut bien qu'on ait recours à quelques subtilités. Mais d'autre part, ces subtilités contribuent à élever de quelques points nos statistiques déjà hautes.

MALFORMATIONS CONGÉNITALES

Les malformations congénitales sont relativement rares chez nous. D'ailleurs elles résultent de contingences qui nous échappent complètement.

SYPHILIS HÉRÉDITAIRE

La syphilis héréditaire, si on se fie aux auteurs les plus connus, est une maladie très fréquente chez les enfants hospitalisés. Il y a eu des volumes entiers d'écrits sur cette question. On a énuméré une série presqu'infinie de symptômes variés qui seraient la signature de la syphilis congénitale:—

"Le coryza précoce et rebelle"; la "mégalosplénie"; la "tuméfaction des testicules, accompagnées ou non d'hydrocèle"; l'"ulcère de l'ombilic"; la "croissance lente"; le "poids stationnaire"; les "hémorragies du nouveau-né", les "malformations surtout multiples"; le "mongolisme"; la "maladie bleue"; les "affections cardiaques"; un "ictère physiologique trop prolongé ou trop intense"; l'"hypertrophie du thymus"; les "cris incessants"; le "crâne natiforme"; le "développement anormal des bosses pariétales"; la "saillie de l'écale du frontal"; la "voûte ogivale"; un "crâne épais contrastant avec des membres graciles"; le "front olympien"; le "rachitisme précoce"; le "craniotabes"; la "dilatation veineuse péricranienne"; les "végétations adénoides précoces"; les "convulsions"; tout "syndrôme méningé"; "l'hydrocéphalie"; "nombre d'encéphalopathies"; les "lésions généralement attribuées à un traumatisme obstétrical; "les cheveux rouges"; l'"hémiplégie spasmodique infantile"; le "syndrôme de Little"; les

"displégies cérébrales"; les paralysies bulbaires"; le "strabisme convergent définitif"; la "cataracte congénitale"; la "surdi-mutité"; la "débilité congénitale"; l'"anorexie"; l'"intolérance aux différents laits"; les "vomissements habituels"; les "anémies"; les "entérites qui surviennent sans fautes alimentaires grossières"; les "bronchites à répétition"; le "prurigo"; le "strophulus"; les "enfants qui naissent pesant plus de neuf livres"; "gémellté univitelline"; enfin, "tout enfant au dessus ou au dessous du poids normal."[4]

Cette énumération molièresque démontre que la tendance générale du corps médical était de soupçonner ou d'incriminer la syphilis héréditaire toutes les fois que l'on se trouvait en face d'un syndrôme dont quelques-unes des données nous échappaient. Il va sans dire que les statistiques sur la fréquence de la syphilis hériditaire étaient extrêmement élevées. On a même prétendu que 55 pour cent des enfants illégitimes en étaient atteints. Mon collaborateur et ami, le Dr. Albéric Marin, a été traité de réactionnaire pour n'avoir trouvé que 12 pour cent d'hérédos à la Crèche d'Youville dans une enquête qu'il y a faite en 1924. J'ignore combien de syphilitiques la Crèche d'Youville a admis en 1924, mais ce que je sais, c'est que depuis 1926 jusqu'au premier janvier 1929, sur plus de 2,000 admissions, nous n'avons trouvé que 9 cas d'hérédo-syphilis prouvée ce qui nous donne un taux de moins de 1 pour cent.

Il peut se faire que quelques hérédos soient morts quelques jours ou quelques semaines après leur admission, avant qu'un diagnostic positif n'ait été établi, et il peut se faire aussi que la campagne d'hygiène préventive qu'ont menée depuis 1920 les différents gouvernements, et le nôtre en particulier, ait donné des résultats encourageants, et le Dr. Desloges, directeur de la division des maladies vénériennes du Service Provincial d'Hygiène, mérite à ce sujet la reconnaissance du public, mais on est loin des 12 pour cent de mon ami Marin, et encore plus des 55 pour cent de certaines statistiques françaises. D'ailleurs, tout récemment, aux Etats Unis, sur 1,000 enfants abandonnés, dont plus de 50 pour cent sont illégitimes, on n'a trouvé que 20 cas de syphilis héréditaire, 19 parmi les enfants légitimes, et 1 parmi les enfants illégitimes.[5] Il est évident que l'on a considérablement exagéré cette question de syphilis héréditaire. Et trois années d'expérience dans une crèche de l'importance de la Crèche d'Youville nous permettant de conclure qu'il va falloir penser à d'autres maladies qu'à l'héredo, si on veut résoudre le problème de nos crèches. Que la débilité congénitale soit due à une cause ou à une autre elle requiert des soins spéciaux qu'il nous a été impossible jusqu'ici de donner à nos prématurés. Ce problème est aujourd'hui à l'étude.

PROBLÈME ALIMENTAIRE

Diarrhées.—L'étude que nous avons faite du problème alimentaire durant les trois années passées à la Crèche d'Youville nous a fourni des renseignements de la plus haute importance.

La diarrhée ou, plutôt, les diarrhées étaient responsables à elles seules de plus du tiers des décès. De plus, on peut dire qu'il était à peu près impossible, il y a quelques années, de trouver dans les crèches un enfant dont la digestion fût normale en tous points, et dont la courbe de croissance fût régulière. Tous vomissaient, pas un d'entr'eux n'avait des selles normales. Un grand nombre mouraient de troubles diarrhéiques. Et, chose curieuse, les auteurs les plus réputés des meilleures écoles du monde semblaient prétendre que ces troubles divers et variés ne pouvaient dépendre ou que d'une suralimentation, ou d'une infection intestinale causée par un lait contaminé. A la suite d'expériences post mortem, faites sur des "organes morts", on avait constaté que l'estomac d'un enfant de quinze jours, par exemple, ne pouvait contenir plus d'une once de liquides. En répétant les expériences et les recherches on était arrivé à fixer des rations alimentaires qu'il ne fallait jamais dépasser sans faire courir des risques graves à l'enfant. D'autre part l'examen bactériologique du lait de vache ayant révélé la présence de germes pathogènes nombreux, on a conclu que toutes les diarrhées dont souffrent les nourrissons devaient être dûes nécessairement à une infection du tube gastro-intestinal par un lait ou un aliment contaminé.

Dans un cas comme dans l'autre, d'ailleurs le traitement était le même; cessation de tout aliment et diète hydrique absolute ou à peu près, (pour laisser reposer les organes digestifs fatigués par une trop forte alimentation), laxatifs violents (pour débarrasser l'intestin des microbes apportés par le lait). On ne semblait

faire aucune différence entre certains troubles digestifs non-infectieux et les troubles digestifs causés par une infection. Variot, en France, a eu beau parler durant vingt ans des dangers de la sous-alimentation; personne ne le prenait au sérieux. Et ce n'est que vers 1920 que l'on a paru s'apercevoir que les troubles diarrhéiques infantiles pouvaient être groupés en deux catégories: (1) les diarrhées non-infectieuse; (2) les diarrhées infectieuses.

Diarrhées non-infectieuses.—Grâce aux constatations précises qu'ont permises les études nombreuses faites sur le métabolisme, aux Etats Unis et ailleurs, on est vite arrivé à pouvoir fixer un régime diététique infantile en se basant, non pas sur des données physiques et anatomiques (fausses la plupart du temps parce qu'elles étaient prises sur un cadavre et non sur organe ou sur un systéme digestif vivant), mais en se guidant sur les besoins physiologiques de l'organisme de l'enfant. Tout le problème alimentaire se trouvait pour ainsi dire résolu. On n'a plus maintenant qu'à donner à un enfant une ration alimentaire suffisante et complète, et s'il ne souffre pas de maladies congénitales rares, ou d'infection, il n'y a aucune raison pour que cet enfant ne progresse pas. En résumé, les rations alimentaires calculées selon les anciennes méthodes sont inadéquates parce qu'elles sont insuffisantes.

Il va sans dire, par ailleurs, que pour l'enfant, l'aliment le plus complet est le lait maternel. C'est pourquoi les crèches devraient pouvoir se procurer du lait humain au moins pour alimenter leurs enfants malades, leurs débiles et leurs prématurés.

Diarrhées Infectieuses.—Ici aussi des progrès considérables ont été réalisés. Tous les auteurs sérieux faisaient remarquer que les lésions anatomiques intestinales faisaient défaut chez un grand nombre d'enfants morts de troubles diarrhéiques. Bien plus, M. Maurice Renaud,[6] entr'autres, dès 1921 attirait l'attention du public médical sur la fréquence des mastoidites insidieuses du nourrisson, et prétendait que les "états infectieux" dont elles sont une complication très grave jouaient un rôle considérable dans la pathogénie du premier âge. Et sur 72 enfants morts d'athrepsie, et chez qui aucune lésion intestinale n'avait pu être relevée, M. Renaud a découvert dans 100 pour cent des cas, une mastoidite double qui était passée inaperçue durant la vie. Un peu plus tard M. McKim Marriott,[7] de St. Louis aux Etats Unis, dans un travail de synthèse extraordinairement intéressant, prétendait qu'un grand nombre de troubles que l'on avait jsuque là attribués au système digestif, étaient dus à des lésions infectieuses situées bien souvent très loin de l'intestin, dans le rein par exemple, mais la plupart du temps dans l'oreille moyenne et la mastoide.

A la suite de plus de 100 nécropsies pratiquées sur des enfants morts à la Crèche d'Youville, de troubles diarrhéiques, nous sommes, nous-mêmes, arrivés aux conclusions auxquelles sont arrivés ces deux chercheurs distingués, et nous sommes en mesure de pouvoir affirmer que les diarrhées, chez nous du moins, étaient dûes, d'une part, à une infection directe de l'intestin probablement par un produit alimentaire contaminé, et d'autre part, à une toxi-infection généralisée dont le foyer infectieux le plus fréquent était dans l'oreille moyenne et la mastoide.

Nous avons donc eu à faire face à (a) des diarrhées infectieuses franches, et (b) des diarrhées infectieuses symptômatiques.

Diarrhées franches. — On groupe dans cette catégorie toutes les diarrhées dûes à une infection du tube intestinal. Les diarrhées de l'été sont de ce nombre. Ce sont, dans l'énorme majorité des cas, des diarrhées aigues ou suraigues.

Les diarrhées demandent un traitement très précis qui se montre d'ailleurs d'une efficacité des plus encourageante. Certaines d'entr'elles guérissent si on met l'enfant à un régime diététique riche en hydrates de carbone (le "high carbohydrate diet" des auteurs américains); d'autres ne guérissent que si on se sert de laits écrémés acidifiés ou, plus fréquemment, de laits albumineux. Toutes peuvent être prévenues par une bonne stérilisation des aliments ou une pasteurisation bien faite du lait. Et c'est sûrement dû à une étroite surveillance de ce côté que le choléra infantile est disparu de la Crèche d'Youville, à tel point que les mois d'été sont précisément les mois où notre mortalité est la plus faible.

Diarrhées symptomatiques.—Ce groupe renferme une série de troubles diarrhéiques subaigus ou chroniques. La diarrhée symptômatique dure plusieurs jours et souvent

plusieurs semaines et mène l'enfant à l'hypothrepsie et à l'athrepsie. La plupart des maladies infectieuses, sinon toutes, s'accompagnent de diarrhée qui ne disparaît que quand la maladie initiale est guérie.

Maurice Renaud a montré toute l'importance des otites et des mastoidites dans la pathogénie des diarrhées du nourrisson. Chez nous, à la Crèche d'Youville, en 1926 et surtout en 1927, mon ami, le docteur Philippe Panneton,[8] notre oto-rhinolaryngologiste, a opéré près de trois cents cas de mastoidites latentes. Cela lui a permis de perfectionner une technique opératoire qui fait de l'antrotomie une opération mineure en en réduisant le temps à environ cent secondes.

Devant la tenacité de l'infection rhinopharyngée, dont nos otites et nos mastoidites nombreuses étaient des complications, nous avons été forcés d'en rechercher la cause bactériologique, et nous avons découvert, dans les sécrétions séropurulantes du nez et de l'arrière-gorge de nos malades tout aussi bien que dans le pus des oreilles et des mastoides, la présence de bacilles diphtériques virûlents et pathogènes.[9] Une immunisation active contre la diphtérie faite avec un mélange de toxine-antitoxine, et plus tard avec l'anatoxine et pratiquée chez tous nos nourrissons âgés de 4 mois ou plus, a réussi à débarrasser la Crèche d'Youville non seulement de la diphtérie clandestine qui la ravageait, mais des otites et des mastoidites latentes dont un si grand nombre de nos enfants souffraient. Je ne suis pas prêt à avancer que l'otite latente qui est si souvent la cause de l'athrepsie, soit toujours dûe à une infection diphtérique ignorée, mais la disparition de l'athrepsie, de même que la disparition de l'otite latente (que nous ne rencontrons maintenant qu'une fois de temps en temps) ont tellement coincidé avec la disparition du coryza purulent, qui, lui-même, n'est disparu qu'au fur et à mesure que la vaccination antidiphtérique se faisait, que je suis convaincu qu'il n'y a aucun espoir de voir diminuer le nombre d'athrepsiques dans nos crèches si on n'essaie pas de tarir la source d'infection diphtérique qui semble les infecter. Cette source d'infection est alimentée par les enfants déjà contaminés, et deuxièmement par les porteurs de germes qu'il faut absolument rechercher, surtout parmi les membres du personnel qui ont vécu depuis longtemps dans ce milieu.

En résumé, le problème alimentaire semble être résolu chez nous parce que l'on donne aux enfants une alimentation suffisante et complète; on prévient les diarrhées en ne donnant que des aliments purs; enfin, on prévient les différentes maladies infectieuses, qui sont si souvent à l'origine de troubles digestifs graves, en particulier les rhinopharyngites et leurs complications, les plus fréquentes, l'otite et la mastoidite.

L'influenza, la rougeole, la coqueluche et les rhino-pharyngites grippales sont pour les enfants hospitalisés, des maladies extrêmement meurtrières, et qui l'an dernier, en 1928, ont été cause de plus de 69 pour cent des décès à la Crèche d'Youville. C'est ce qui m'a amené à dire au début de ce travail que tous nos efforts doivent maintenant être dirigés vers ces trois ou quatre maladies graves dont la terminaison la plus fréquente est la broncho-pneumonie.

L'INFLUENZA EPIDEMIQUE

L'influenza est certainement une des maladies les plus graves et les plus meurtrières que nous ayons à combattre. Heureusement, elle ne survient que périodiquement, à des intervalles d'une dizaine d'années, et d'autre part, les nouveau-nés semblent jouir vis-à-vis d'elle d'une immunité naturelle qui les met à l'abri de cette infection et de ces complications pulmonaires au moins jusqu'à l'âge de trois mois. Mais, par contre, pendant la dernière épidémie qui a duré chez nous de novembre 1928 à la fin de janvier 1929, on peut dire que pas un enfant âgé de plus de quatre mois n'y a échappé, et, ce qu'est peut-être pire, à un certain moment, près du tiers de notre personnel hospitalier, religieuses, infirmières et aides, souffraient de la grippe, durant le temps, précisément, où nos enfants exigeaient des soins plus assidus et plus minutieux.

En dehors de sa gravité, et à part le fait que les enfants de moins de trois mois semblent jouir d'une immunité naturelle vis à vis de l'influenza épidémique nous n'avons pu arriver, durant la dernière épidémie, à aucune conclusion pratique qui puisse servir à combattre ou à prévenir cette infection et ses nombreuses complications pulmonaires, pneumonie, broncho-pneumonie, et pleurésie purulente.

ROUGEOLE

La rougeole est, peut-être, à part l'influenza épidémique, la maladie la plus grave dont puissent être atteints les enfants hospitalisés.

Les épidémies de rougeole ne surviennent qu'à tous les trois ou quatre ans. Les nouveaunés jouissent vis-à-vis d'elle d'une immunité naturelle qui disparaît, comme pour l'influenza, vers le troisième ou quatrième mois. Mais après cet âge, pas un enfant n'y échappe, et on dirait que plus l'enfant vieillit plus les complications sont fréquentes et graves. Les complications pulmonaires sont les plus fréquentes de beaucoup, mais on rencontre également un très grand nombre d'otites aigues compliquées ou non de mastoidites, qu'il faut absolument rechercher et traiter.

La rougeole est apportée dans les crèches par des membres du personnel; les infirmières, ou les aides, reviennent en état d'incubation de leur famille ou d'une visite chez des parents ou des amis. Après quatre, cinq, ou dix jours on constate qu'elles sont atteintes de rougeole, mais durant ces quelques jours, elles ont semé inconsciemment la maladie dans les salles. Elle peut également être apportée par des enfants qui nous sont envoyés en pleine période d'incubation de rougeole.

Les constatations pratiques que nous avons faites à la Crèche d'Youville sont les suivantes: La rougeole est une maladie excessivement grave. Ses complications les plus fréquentes sont la bronchopneumonie et la pleurésie purulente. A part le sérum de convalescents qu'il est impossible de se procurer en temps opportun et en quantité suffisante, aucun traitement spécifique. Une fois entrée dans une crèche, il est impossible, par les moyens connus, d'empêcher la rougeole de se répandre. Mais la très grande contagiosité de cette maladie fait qu'au bout de deux mois l'épidémie s'éteint d'elle même. Les seuls moyens prophylactiques que nous ayons à suggérer seraient de surveiller étroitement les foyers familiaux de contagion, et de refuser l'admission à tout enfant dont le lieu de provenance est douteux.

LA COQUELUCHE

La coqueluche est beaucoup moins contagieuse que les précédentes. Mais comme elle se communique surtout dans les quelques jours qui précèdent les quintes, et qu'il est à peu près impossible au début de différencier une toux de coqueluche d'une toux de trachéite ordinaire, il arrive la plupart du temps que l'on isole dans les pavillons spéciaux des "coqueluches" qui n'en sont pas, et qu'on garde dans les salles des "rhumes" ordinaires qui deviennent, au bout de quelques jours, des cas de coqueluche franche.

Il nous manque un moyen sûr de faire un diagnostic positif de coqueluche avant l'apparition des quintes. C'est, d'après moi, la seule raison pour laquelle nous n'avons pas encore été capables de nous débarrasser de cette maladie. En attendant ce moyen, il faudrait que les crèches fussent assez spacieuses pour qu'on puisse y organiser des salles spéciales où les "douteux" seraient isolés les uns des autres dans des box. Comme pour la rougeole et l'influenza épidémique, il semble exister une certaine immunité naturelle qui disparaî vers le troisème mois.

Aucun traitement spécifique curatif ou prophylactique nous a donné des résultats constants sur lesquels on puisse baser des conclusions pratiques.

RHINO-PHARYNGITE GRIPPALE

Les rhino-pharyngites grippales peuvent être causées par un nombre considérable de germes infectieux. Comme nous l'avons déjà vu, jusqu'à l'automne 1927, la plupart des cas de rhinopharyngites que nous avions n'étaient en somme que des cas de diphtérie nasale. L'immunisation contre le bacille de Klebs-Loeffler a mis nos enfants à l'abri d'une cause importante d'infection rhino-pharyngée, mais depuis, deux fois par année, le printemps et l'automne, nous avons encore à faire face à des épidémies plus ou moins graves de "grippe canadienne". Tout le monde en souffre, même le personnel. Mais ces épidémies sont d'autant plus meurtrières que les enfants en bas âge semblent plus particulièrement susceptibles aux complications pulmonaires dont elles sont, dans les cas graves, la terminaison fatale.

Leur apparition coincide tellement bien, et de façon tellement constante, avec la période de l'année où il est impossible de chauffer convenablement les pièces de la maison, que je suis porté à croire que la température ambiante a une influence marquée sur l'état de résistance de l'organisme de l'enfant vis-à-vis de cette infection. En effet, au printemps et à l'automne,

XUM

si le système de chauffage fonctionne, la pièce devient vite surchauffée et l'atmosphère se dessèche. D'autre part si on diminue ou si on cesse le chauffage, la pièce devient trop froide et trop humide. Dans une salle de nourrissons en bas âge, où on a fait des recherches spéciales sur ce point, on a pu constater, à trois occasions diverses, qu'à peu près tous les enfants de cette salle ont souffert de rhino-pharyngite grippale précisément le jour qui a suivi celui où la température est montée jusqu'à 85° F. et l'hygromètre est descendu jusqu'à 35 pour cent d'humidité.

Le professeur Finkelstein, en Allemagne, prétend que le taux de mortalité de la crèche qu'il dirige n'a baissé que le jour où les rhino-pharyngites ont disparu (là dessus tout le monde est d'accord). Il ajoute que les rhino-pharyngites ne sont disparues que le jour où on a cessé, chez lui, de faire une désinfection systématique quotidienne de la bouche, du nez, et de la gorge des enfants. Le problème des infections rhino-pharyngées n'a malheureusement pas été chez nous aussi simple à résoudre. Nous avons cessé de faire la toilette de la bouche et du nez dès le commencement de 1926, et les infections de la gorge n'ont diminué en fréquence et en gravité qu'après avoir immunisé tous nos enfants contre la diphtérie, et elles n'ont pas complètement disparu. Les complications rhino-pharyngées sont nombreuses et variées, mais les plus graves et peut-être les plus fréquentes sont les complications pulmonaires. Aucun vaccin de s'est montré chez nous efficace.

En résumé:—Il faudrait, d'après moi, que le personnel des crèches fut assez nombreux pour que dès qu'une religieuse ou une infirmière, ou un médecin, souffre de grippe il lui soit *défendu* d'approcher des enfants, sans que, pour cela le service en souffre, et sans que le reste du personnel ne soit surchargé de travail. Chaque salle devrait être munie également de thermostat et d'appareils spéciaux pour que la température et l'humidité de l'atmosphère soient maintenues à un degré convenable et uniforme.

MALADIES INFECTIEUSES

Diphtérie.—En face du nombre de cas de diphtérie franche que nous avons constatés en prenant charge du service des nourrissons en 1926 nous avons entrepris l'immunisation contre la diphtérie de tous les enfants âgés de deux ans et plus. Depuis la Crèche n'a pas eu à souffrir de cette maladie, du moins sous sa forme la plus connue. Ce n'est que l'année suivante que cette immunisation a été généralisée à tous les enfants de quatre mois et plus, car c'est de quatre mois à deux ans que la diphtérie nasale est la plus fréquente. Comme il fallait s'y attendre on a découvert plusieurs porteurs de germes diphtériques parmi le personnel. Depuis, la diphtérie est disparue complètement de chez nous, et nous n'immunisons plus que les enfants âgés de plus de deux ans, tout en se tenant prêts à toute éventualité au cas où un cas de diphtérie nasale apparaîtrait dans une salle de nourrissons.

En résumé.—L'immunisation contre la diphtérie devrait être obligatoire dans toutes les institutions où des enfants sont hospitalisés. Cette immunisation peut se faire selon la technique la plus répandue, par injections hypodermiques, et chez les tout petits enfants, surtout s'ils souffrent de coryza, on peut pratiquer l'immunisation par instillations nasales de vaccin qui, donné de cette façon, développe une immunité générale tout en agissant comme antiseptique local de la plus haute valeur.

Scarlatine.—La scarlatine n'est pas très contagieuse, heureusement. Il est très facile de circonscrire une épidémie en isolant les cas de scarlatine au fur et à mesure de leur apparition. Elle frappe surtout les enfants agès de plus de deux ans.

Comme la disparition de cette maladie a coincidé avec une immunisation active contre la scarlatine de tous les enfants de deux ans et plus avec une toxine streptococcique, j'ai cru un moment que cette immunisation était aussi efficace que la vaccination antidiphtérique. Nos observations n'ont tout de même pas été assez complètes, pour qu'on puisse, sur ce point, tirer des conclusions pratiques. Mais je n'hésiterais pas, vu l'innocuité de cette médication, à conseiller d'en faire l'essai du moins dans les institutions où la scarlatine semble exister à l'état endémique.

Érysipèle.—L'érysipèle est une maladie très grave et très fréquente dans les crèches où l'organisation scientifique n'est pas parfaite.

C'est un encouragement pour nous de constater que cette maladie a complètement disparu de la Crèche d'Youville. Nous n'en avons as eu un seul cas depuis, au moins, un an.

Varicelle. — La varicelle est également une

maladie grave dans les milieux hospitaliers. Ses complications, rares dans les familles, sont fréquentes et graves dans les crèches—abcès multiples, septicémies, athrites suppurées, etc.

Nous avons fait en 1927 une constatation très intéressante. Une épidémie de varicelle a envahi notre institution seize jours après avoir admis chez nous, un cas de zona herpétique. Cette observation importante mérite d'être mise au dossier déjà volumineux du "Zona *vs.* Varicelle."

Méningite.—Les méningites bien authentiquées sont relativement fréquentes chez nous. On relève dans nos statistiques des cas nombreux de méningite tuberculeuse et de méningite cérébro-spinale épidémique, sur lesquelles il m'est à peu près impossible de me prononcer, si ce n'est que le sérum antiméningococcique ne parait pas agir d'une façon aussi constante qu'on semble le croire dans certains milieux.

J'ai indiqué bien brièvement et j'ai étudié très succinctement les différentes maladies qui, groupées ensemble, constituent ce que l'on peut appeler la "maladie des Crèches". Ce sont toutes des maladies plus ou moins meurtrières. Mais, je l'ai déjà dit, il en existe d'autres qui, sans être graves ni mortelles en soi, sont quand même dangereuses et ennuyeuses, soit parce qu'elles affaiblissent les enfants et les prédisposent aux différentes maladies, ou soit parce qu'elles nécessitent un surcroît de travail de la part du personnel et qu'elles entravent ainsi le service et en diminuent l'efficacité. Je ne dirai un mot que des plus fréquentes, les pyodermites, la vulvo-vaginite gonococcique, le rachitisme, et la tétanie.

LES PYODERMITES

Les pyodermites sont dûes à des causes endogênes ou des causes exogênes. Or une des observations les plus remarquables que nous ayons faites, à ce sujet, a été de découvrir que l'énorme majorité des abcès multiples dont souffraient les enfants de la Crèche d'Youville n'étaient au fond que de la gâle infectée. C'est à mon ami, le Dr. Albéric Marin, notre dermatologiste, que revient le mérite d'avoir fait le diagnostic. Les autres pyodermites diminuent en nombre et en gravité, à une vitesse géométriquement progressive, au fur et à mesure que les différentes maladies infectieuses et pyogéniques disparaissent de la Crèche. Excepté durant les quelques semaines qui suivent une épidémie de varicelle, il est aujourd'hui des plus rare d'avoir à traiter une infection cutanée.

LES VULVO-VAGINITES

La vulvo-vaginite gonococcique des petites filles est une des maladies les plus facilement transmissibles et dont le traitement est le plus décevant. Il est arrivé un moment où, chez nous, malgré toutes les précautions que nous ayons pu prendre pour circonscrire cette épidémie, nous avions sous traitement près de deux cents fillettes infectées de vulvo-vaginite. Ceux qui sont au courant de la question n'en seront pas surpris. Il va sans dire qu'un grand nombre de traitement divers ont été mis à l'essai. Et dans quelques mois, mon ami et collaborateur, le Dr. Noé Fournier, sera capable, j'en suis sur, de dire quel est le mode de traitement et le médicament qui se seront montrés chez nous les plus efficaces. Dès maintenant, sans empiéter sur le terrain du Dr. Fournier, je puis affirmer que cette maladie si ennuyeuse et si tenace peut être guérie définitivement avec une technique appropriée suivie avec persévérance.

RACHITISME ET TETANIE

Le rachitisme et la tétanie sont complètement disparus de la Crèche d'Youville. Un régime diététique complet, renfermant des sels minéraux en quantité suffisante, de même que l'administration systématique d'huile de foie de morue (et dans les cas tenaces la lampe à vapeurs de mercure) ont tôt fait de nous débarrasser de ces deux affection.

On voit donc par ce long exposé qu'à part quelques troubles digestifs facilement contrôlables, le problème des crèches n'est au fond qu'un problème infectieux contre lequel nous n'avons la plupart du temps à notre disposition que des mesures prophylactiques à opposer. Il va sans dire que ces mesures de prévention ne sont possibles qu'à la condition d'être surveillées par un personnel médical nombreux et complet, et qu'à la condition d'être mises en marche par un personnel hospitalier dévoué, intelligent et instruit.

L'amplitude du problème exige des connaissances scientifiques qu'il est impossible de trouver toute réunies dans un seul cerveau. Le

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personnel médical d'une crèche doit comprendre un nombre suffisant de médecins spécialisés, tout comme un hôpital général d'enfants ou d'adultes, et organisé selon les grandes lignes indiquées par le Dr. Abt, de Chicago.[10] Chaque service doit jouir d'une certaine autonomie, mais, par contre, il ne faut pas que les différents services médicaux soient isolés les uns des autres par des cloisons trop étanches. Au contraire, le succès dépend en grande partie d'une collaboration étroite, intime et amicale, entre les divers médecins de l'institution. Ces services médicaux, pour être cimentés, pour ainsi dire, les uns avec les autres, doivent être unis sous la direction centralisée d'un chef médical. Il faut de toute nécessité qu'il y ait, dans une institution comme la Crèche d'Youville, une personne autorisée qui soit au courant de tout ce qui se passe ou de tout ce qui se fait dans quelque partie que ce soit de l'institution. Le succès dépend également d'une co-opération étroite non seulement entre les divers médecins mais entre les médecins et le personnel hospitalier.

Le personnel hospitalier doit être assez nombreux. Chaque infirmière ne doit avoir sous ses soins plus de sept ou huit enfants. Chacune d'entre elles doit être instruite, mais l'instruction n'est peut être pas aussi importante que ne le sont dévouement et la bonne volonté.

Le personnel hospitalier d'une crèche doit comprendre, dans ses cadres, un ou plusieurs internes. Il est regrettable que malgré nos efforts nous n'ayons pas encore un aide si indispensable. Je suis convaincu que nous aurions pu, grâce à lui, arriver à des résultats encore plus marqués que ceux que nous avons obtenus.

CONCLUSIONS

1.° Le problème des crèches est soluble. Les statistiques étrangères, comme celle de la Crèche d'Youville, le démontrent.

2.° Le problème des crèches est un problème infectieux.

3.° Les enfants hospitalisés dans une institution ne meurent pas d'une maladie qui soit propre à cette institution. Et le milieu hospitalier ne diffère du milieu familial que parce qu'il constitue une conglomération où les individus y sont plus fréquemment exposés aux maladies contagieuses.

4.° Enfin, maintenant que nous comprenons mieux le problème alimentaire infantile, les statistiques des crèches dépendent des mesures qui seront prises pour prévenir tout un groupe de maladies, toutes évitables par définition.

BIBLIOGRAPHIE

1. VOIR *Rapports annuels.*
2. LESNÉ, E., *Bull, d'Acad. d. méd.,* 16. nov., 1926.
3. *Ibid., Pédiatrie Pratique* **23:** 61, 15 mars, 1926.
4. PINARD, M., Diagnostic de la Syphilis chez la femme en état des gestation et chez le nouveau-né. Imprimerie des Alliés, Montréal, 1927, pp. 11 et suivantes.
5. JENKS, J. ET DONNELLY, D., *Am. J. Dis. of Child.* **37:** 1198, June, 1929.
6. RENAUD, M., *Bull. Soc. méd. d. Hôp. d. Paris,* 22 et 29 oct., 1921; *J. méd. Français* **13:** 10 oct., 1922; *Ann. d. mal. de l'oreille* **45:** 341, avril, 1926.
7. MARRIOTT, MCK., Pediatrics. Practical Med. Series. The Year Book Publishers, Chicago, 1926, pp. 343 et suivantes.
8. PANNETON, P., *Ann. d. mal. de l'oreille* **47:** 986, nov., 1928.
9. LONGPRÉ, D. ET PANNETON, P., *Soc. méd.,* Montreal Séance, oct. 4, 1927.
10. ABT, I. A., Pediatrics. Practical Med. Series. The Year Book Publishers, Chicago, 1928, Introduction, pp. 5 et suivantes.

VACCINATION AND ENCEPHALITIS.—An encephalitis, indistinguishable from that which occasionally follows recent vaccination ("post-vaccinal encephalitis"), quite commonly occurs idiopathically—that is, without being preceded by any known infectious disease: such an encephalitis also occurs after influenza and whooping-cough, again in subjects who have never been vaccinated or not vaccinated recently. In the *Lancet*, 1928, i, 1250, and 1929, i, 221, Russel Brain and Donald Hunter reported on six cases of encephalomyelitis in children, three of whom were vaccinated in infancy and two had never been vaccinated. (No reference to vaccination is made as regards the sixth child.) They distinguish this condition from encephalitis lethargica, but stress its marked clinical similarity with the encephalitis following vaccination. It is plain, therefore, that cases of encephalitis of the post-vaccinal type may occur in unvaccinated persons.

"Now the great secret of wisdom undoubtedly consists in knowing what we ourselves are, what we can, and what we ought to do; as that of prudence is to know what others are, what they can do, and to what they are inclined."—J. C. Lavater.

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THE ADVANTAGES OF PRELIMINARY EXAMINATION AND PREPARATION OF THE SURGICAL PATIENT*

BY F. W. LEECH, M.B.,

Toronto

I THINK all agree that there accrue to the patient, surgeon, and anæsthetist many advantages through the thorough examination of that patient preparatory to his receiving an anæsthetic, be it general, regional, spinal, or colonic. Perhaps in certain instances the surgeon may content himself with the thought that a reputable internist has examined the subject for anæsthesia. This is ideal, but does not preclude the examination by the anæsthetist, as he evaluates the risk from a different standpoint.

Owing to the psychic element in the production of shock our first contact with the patient is of great importance. We learn of his fears and endeavour to assuage them. Not infrequently we learn of his reaction to certain forms of anæsthetics he has had previously, and his desires in this respect. Should these not meet with our approval we can probably explain the rationale of some other anæsthetic agent.

While we have been observing the patient, we note if he is over or under weight, frail or robust, pale (anæmic), toxic or feverish, if he flushes easily (unstable vaso-motor control). Are the veins prominent? Are the eyes puffy, or is there other evidence of œdema? Does the thyroid appear enlarged? Are there tremors of the fingers, or clubbing? etc.

A brief history of familial tendencies and previous illness should be obtained, especially noting the occurrence of epilepsy, insanity and asthma in the family, and, in the individual, anæmia, cardio-renal disease, hypertension or hypotension, diabetes, destructive disease of the liver or its appendages, including toxæmias of pregnancy and other prolonged toxic conditions, bacterial or autonomic. One should inquire as to the habits, particularly as regards the use of alcohol and cigarettes.

And now proceeding to the physical examination of the patient, we note the size and outline of the pupil and its reaction to light; the condition of the teeth and naso-pharynx, as infection there may readily be carried into the respiratory passage. One should palpate the thyroid gland in all cases. The general characteristics of the pulse are recorded, noting especially its volume and if it is well maintained.

The chest examination should stress the patency of the airway, the character of the breathing, the free excursion of the whole chest and especially the diaphragm, evidence of tuberculosis or other chronic infection, the presence or absence of moist râles at the bases of the lungs. In the examination of the heart one should observe particularly the quality of the heart muscle sounds as well as its other features.

A special effort should be made to obtain a record of the normal blood pressure while the patient is in a tranquil state, recording the systolic and diastolic readings so that the pulse tension may be deduced. Our interpretation of the various phases of blood pressure varies, but I agree with Denman that the pulse pressure is of greatest importance in determining the condition present, whether due to heart or arteries, and is most important in determining our treatment. Lauder Brunton says in substance: Pulse pressure depends upon pulse rate. If the pulse is slowed more time is allowed for the blood to flow through the arterial system during diastole. Diastolic pressure will be lowered and pulse pressure increased. The reverse also applies. A weak heart will not raise arterial tension as rapidly as a stronger one, and the time elapsing between the end of each systole and the next will be shorter and the pulse pressure lower. In a strong heart the interval between systoles is longer and there is a greater pulse pressure. When the blood vessels are contracted the diastolic blood pressure remains high and the pulse pressure is relatively low, and *vice versa*. A low systolic pressure with a large pulse pressure shows dilated vessels and probably a strong heart. A low systolic with a small pulse pressure signifies a weak heart; in addition there is

* Read before the Section of Anæsthesia, Academy of Medicine, Toronto, February 28, 1929.

probably some dilatation of the vessels, though a feeble heart with normal vessels could give this picture.

Of the laboratory investigations the commonest one of course is the examination of a single specimen of urine voided a few hours before operation. Should we be satisfied with this? Should we not at least have a report upon a 24-hour specimen, or, better still, a report upon several specimens obtained at intervals? The presence or absence of albumin or casts, sugar or acetone, in a single specimen is of little value. In cardiovascular or other doubtful cases the phenosulphophthalein and water excretion test of kidney function and a blood urea estimation are of value, especially if one of the direct anæsthetic agents is to be administered.

Of equal importance is the estimation of the percentage of hæmoglobin and the number of red blood cells. During anæsthesia there is a definite suboxidation or anoxæmia in direct proportion to the degree of anæsthesia. If gaseous agents are used the oxygen molecules in the oxygen-carrying elements of the blood and in the tissues are supplanted. If one of the direct agents is used the same is true to a lesser degree, but in addition the protoplasm of the cells is rendered inert, thus lowering its own metabolism. Hence, if the percentage of hæmoglobin is low and the red blood cells are reduced in number, the margin of safe anæsthesia is proportionately reduced. A drop of 15 to 25 per cent in the oxygen-carrying power of a robust patient is of slight importance, but in anæmic individuals, who are already carrying a maximal load, is serious and may mean decompensation. The direct anæsthetic agents are destructive to the red blood cells and platelets and retard the activity of the blood-forming organs. Hence the metabolism of the already anæmic patient is further interfered with, and he may be seriously handicapped during convalescence. It is generally conceded that no patient with a hæmoglobin index below 60 per cent, and a red blood count below 3,500,000 per c.mm. should be given an anæsthetic in other than an emergency.

The effects of anæsthesia upon the liver must receive careful consideration. In all those cases where the history or clinical symptoms leave room for doubt, a study of bile pigment disturbances and hepatic function should be undertaken. Thalheimer, Lee, and others have emphasized the balance of function between liver and pancreas during anæsthesia. There is a rise in blood sugar and a drop in insulin units (Minnitt). As a result of the interference with the glycogenic function of the liver and the curtailment of available carbohydrate, the fat combustion is incomplete and acid bodies (oxybutyric and diacetic) along with their allied substance, acetone, appear. Anderson would entirely explain the condition of shock by this interference with the glycogenic function of the liver. Crile, too, considers shock as an "intracellular acidosis". Other means of estimating the patient's condition are worth mention.

First: the breath-holding test. Ask the patient to take three deep breaths and hold the last one. If he can hold it easily for 40 seconds he is considered a good risk. If he can hold it for only 20 seconds we suspect cardiac disease, with a relative or actual acidosis.

Second: Moot's rule, which takes into account the balance between the heart and the work it has to accomplish (Wilson). It is $\frac{\text{Diastolic Pressure}}{\text{Pulse Pressure}} \times 100$. If the resultant figure lies between 30 and 70 he is considered a good risk; if below 25 or over 75 he is a poor operative risk.

Third: a more or less similar means of estimating the stability of the heart is the "energy index". It is: systolic pressure + diastolic pressure $\times$ pulse rate. If the resultant figure (considering only the thousands) lies between 12 and 18), the patient is considered a safe operative risk.

Only through institution of suitable corrective measures will the information elicited during this investigation be of value in rendering our patient a safer anæsthetic and surgical risk. These we will consider briefly under the various headings in the preparation of our patient.

The environment of one sent into hospital for operation should receive consideration. The room should be quiet and suitably lighted. It should be decorated in soft harmonizing colour schemes. We have not infrequently seen patients develop severe headaches and become almost hysterical in a room tinted in yellow or orange shades. The patient should be surrounded by cheerful, competent nurses who inspire confidence within him. When possible he should have two or three days' complete rest under such conditions,

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in order that the physical examinations and laboratory investigations may be completed.

The diet should be light and nourishing and should include large quantities of fluids, fruit juices, and carbohydrates in order to increase the glycogen reserve in the liver. This applies particularly to children and to adults who are undernourished or dehydrated, or both. The fluids may be continued right up to within three or four hours of the operation. The bowels should be kept active without purging. Purging depletes the body fluids and withdraws the stores of glycogen. Sleep at night should be provided when necessary by the use of the milder sedatives. The patient who is awake all night, and in a state of absolute terror, is too often the patient who succumbs to "nerve exhaustion" during the early stages of anæsthesia.

Those cases who have insufficient cardiac reserve and cardiorenal cases will benefit by a prolonged rest with suitable dietary and medical measures. The purely renal cases, too, must receive careful dietary and eliminative preparation. The anæmic patient, whether of primary or secondary type, and those who show hæmolysis, should receive one or more transfusions of about 500 c.c. of blood at intervals of three to five days if time permits. In cases of emergency the transfusion should be carried on during the operation. No other fluid is retained in the circulation to the same extent as is whole blood in cases of shock from injury.

Those cases where there is a history, or clinical evidence, of impairment of liver function, obstruction or jaundice, also cases of ketosis, except perhaps diabetics, will, in the opinion of Anderson and Lee, be materially benefited by giving one to two litres of a 10 per cent glucose solution intravenously with 10 to 20 units of insulin per litre of glucose solution either in the solution or in divided doses intramuscularly. It has been shown by Dale and Best that the insulin not only increases the combustion of carbohydrates but also promotes the storing of glycogen in the liver. This is perhaps the most important factor in avoiding a post-operative acidosis or ketosis. I have purposely avoided touching upon the preparation of the diabetic, as this is perhaps better left in the hands of the internist who has special knowledge of such cases.

Our final preparation of the patient before entering the operating-room consists in administering suitable pre-medication. Gwathmey considers that proper preliminary medication is of equal importance with the general anæsthetic agent. Continuing, he said of his experiments upon 500 animals: "Regardless of the anæsthetic used, whether ether, nitrous oxide and oxygen, or one of the hydrocarbon gases, if preliminary medication was not administered pathologic lesions in the lungs were invariably found at necropsy." Most of us consider that proper preliminary medication protects the patient. It reduces the metabolic rate and reduces the amount of general anæsthetic required, and increases the margin of safe anæsthesia. The induction is less difficult and is free from the usual struggles of the excitement stage.

Many nose and throat surgeons feel that pre-medication is contra-indicated in their work. This is a debatable point, but I personally believe that the dangers of foreign material reaching the lungs are not greater after moderate pre-medication. The patient may still be kept in a stage of light anæsthesia so that the cough reflex may be readily elicited. The respiratory efforts are relatively shallow, quiet and rhythmical, with less opportunity for the inspiration of foreign material.

The drug in most common use is morphia. Gwathmey prefers to combine with it the synergistic action of magnesium sulphate. He gives morphia gr. $\frac{1}{8}$ in 2 c.c. of 50 per cent magnesium sulphate intramuscularly every 15 minutes until three doses are administered to robust males, and two doses to females. He finds that the action of morphia is prolonged to four times that of morphia alone. He gives also chloretone, gr. 10, by mouth or as a suppository. If unconsciousness is desired before going to the operating-room he gives a retention enema containing paraldehyde, drm. 2; ether, oz. $2\frac{1}{2}$; oil q.s. ad oz. 4.

Rowbotham divides his patients into four groups:

First: children under seven years, the sick and puny over that age, very old and feeble adults, those with low blood pressure, toxic and shocked patients, those who have suffered from long standing pyrexia, and those anæmic from hæmorrhage. To these he gives per rectum paraldehyde, drm. 1 per stone of body weight,

one hour before operation, and at the same time hypodermically atropine gr. 1/200 to 1/100.

Second: normal children over seven years and normal adults. This group received the same as group one, but were reinforced by a hypodermic of heroin, gr. 1/60 per stone of body weight.

Third: alcoholics and very nervous patients and athletes over twenty-five years. These were treated in the same way as group two, but a second hypodermic of heroin of one-half the first dose was given forty-five minutes before operation.

Fourth: this group comprised only patients suffering from Graves' disease. To these he gave paraldehyde, as previously stated, but in olive oil oz. ½ per drachm of paraldehyde; also morphine and hyoscine hypodermically.

This procedure is criticised as being laborious, impracticable and unsafe, but is introduced here on account of his groupings of cases. In this connection it is worthy of recall when considering the dosage of pre-medication.

The more common combination of drugs is that of morphine and atropine, and it is a very good one if sufficient morphia and not too much atropine is given. Atropine paralyses the nerve endings in the glands and so prevents the secretion of large amounts of mucus and saliva. By the vaso-dilator action of atropine the respiratory centre is stimulated; there is increased ventilation at the lung surface, and a relative increase of tissue metabolism. Atropine is, therefore, contra-indicated before the administration of a gaseous anæsthetic agent.

My preference, especially where it is desired to administer N_2O and O, is the hyoscine, morphine and cactine combination. The No. 1 tablet is given one hour before operation, to be followed by a No. 2 tablet 20 minutes before operation, except in debilitated or very toxic patients, when the No. 2 may be given in each instance. The cactine is a cardiac stimulant, and, with the combined action of hyoscine, the patient has a feeling of wellbeing that is not obtained by other combinations of drugs. Even if ether is administered, the secretions are not usually troublesome following this pre-medication.

CONCLUSIONS

In conclusion, I would say that the anæsthetist who avails himself of the opportunity to investigate the surgical patient some time previous to operation approaches that patient with a feeling of confidence born only of the knowledge he has acquired, and he will enhance his position in the surgical teamwork that has made surgery safer. By his co-operation with the surgeon and internist in administering suitable preliminary treatment to the patient who is anæmic, or has deranged liver function, or to the cardio-renal case, etc., he will render his patient a better anæsthetic and surgical risk.

The multiple and varied untoward effects of the different anæsthetic agents are decidedly reduced by administering sufficient suitable preliminary medication.

TREATMENT OF CARBON MONOXIDE POISONING.—Experiments *in vitro* and on animals as well as clinical observations have convinced F. Koza of the value of ultra-violet irradiation in the treatment of gas poisoning. It is claimed that the ultra-violet rays accelerate the dissociation of carboxyhæmoglobin to a very marked extent. Carboxyhæmoglobin poured into a Petri dish lost 20 per cent of its initial content after five minutes' irradiation at a distance of 50 cm. The blood of a rabbit poisoned with coal-gas and showing 64 per cent of carboxyhæmoglobin lost 50 per cent of carbon monoxide after forty minutes' irradiation at 50 cm. distance, whereas the blood of a control rabbit, which was not irradiated, lost only 17 per cent of the carbon monoxide during the same time. A similar very striking effect of the ultra-violet rays was observed in the case of two poisoned girls, one of whom was treated with ultra-violet rays, while the other was not. Apart from their direct dissociating influence, the ultra-violet rays are said to cause also changes of the acido-basic balance of the body, resulting in an immediate stimulation of the respiratory centre.—*Brit. M. J.* **1**: 71, April 27,1929.

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THE MODERN CONCEPTION OF DERMATOLOGY AND SYPHILOGY*

BY GUSTAVE ARCHAMBAULT, M.D., AND ALBÉRIC MARIN, M.D.,

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DERMATOLOGY and syphilology are closely united specialties. To try to separate them is to condemn oneself to know little of either one or the other. They both require the same researches; the study of one necessarily involves the exhaustive study of the other.

We know that syphilis specially affects the tegument. Numerous and varied are the cutaneous accidents which are noticed in the course of primary, secondary and tertiary syphilis. Syphilides often assume the appearance of certain diseases of the skin. A diagnosis cannot be established if one has not a thorough knowledge of dermatology. On the other hand, the dermatologist cannot interest himself in cutaneous affections only, he is compelled to also take up the study of syphilis, whether he wants to or not, on account of the frequency of the disease.

In certain medical centres not only are dermatology and syphilology considered as two distinct specialties, but, what is more serious, syphilities are treated by urologists. Why? What is the connection between urology and syphilology? The studies and the knowledge of the urologist and of the syphilologist are entirely different. In the same degree that the syphilologist must be an internist directing his attention to pathology, to the laboratory, the urologist must strive to become an accomplished surgeon.

The real urologist, absorbed in the mighty problems of his specialty, is by no means able to face those of the treponema infection. If he undertakes to treat these two classes of patients, either one or the other, probably both, will not receive the proper treatment. In our opinion it would be a grave error to continue to associate syphilology and urology, because such an association would be highly prejudicial to our patients. Syphilis is a serious disease which requires extensive and varied researches. One should give one's whole time and study to syphilis, without being lured into other fields which do not at all concern syphilis.

Among all the specialties, dermato-syphilology is undoubtedly the most important one. A knowledge of it affords the means to recognize and properly treat the most common cutaneous affections: eczema, psoriasis, urticaria, impetigo, etc. Moreover, it is the most powerful weapon which can be used to combat the three most serious diseases which affect humanity—tuberculosis, syphilis, cancer, of which cutaneous lesions are often the first clinical symptoms. Frequently these diseases first manifest themselves by lesions of insignificant appearance. Diagnosed at the very onset their ravages can be checked in most of the cases. Thus, an energetic treatment of syphilis at the pre-humoural period can cure a great many cases and prevent the dreadful complications found in the nervous and cardio-vascular systems. It is proved that a large number of cancers of the skin treated at the incipient stage can be cured. The physician who has a knowledge of dermatology and syphilology is the only one who can recognize them at this period and immediately apply the proper treatment. Many patients affected with cancer and syphilis died because diagnosis was made too late, when their ravages were already irreparable, not through negligence but through lack of knowledge.

All practitioners should have a sound general knowledge of dermato-syphilology. They would then be aware of the advantages which their patients could derive through appropriate treatment. To be able to obtain this position thorough teaching should be followed up by a serious course of studies. In future during the course of medical studies, more importance should be laid upon this specialty than has been the case in the past.

The time has passed when the dermatologist contented himself in prescribing a paste or a

* Read at the Sixtieth Annual Meeting of the Canadian Medical Association, Montreal, June 20, 1929.

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lotion, when skin diseases were divided in two classes—those that could be cured by zinc ointment and those that could not. During the last twenty-five years, due to the research of Besnier, Hebra, Brocq, Unna, Darier, Fox, McKee, to mention only the principal ones, new ideas have revolutionized our conceptions concerning the etiology, pathology, and therapy of dermatoses. The tegument is not any longer considered as a mere covering, whose only object is to protect the body against exterior influences. It is a complex system endowed with great activity, as is proved by its abundant vascularization, the countless number of the glands it contains, and the localization in it of the organs of sensibility.

The skin plays a complex part in an organism where everything is closely united. It is not a whole but a part of a whole. As a function is seldom affected alone, we quite understand that cutaneous lesions may have their origin in other organs or be reflected on other systems.

Besides the skin diseases which have a clearly defined and well differentiated etiology, where, for example, the causal agents come from the exterior, such as the traumatic, toxic, parasitis and bacterial dermatoses, there are others, such as eczema, prurigo, urticaria, psoriasis, in which manifestations on the skin are only the external symptoms of a poorly functioning organ or system, such as the liver, spleen, digestive tract, kidneys, endocrine glands, and sympathetic system. In addition to the cutaneous manifestations, the patient's general condition has to be considered. Behind these special systems the real cause has to be looked for.

At this point we must now consider the qualifications of the dermatologist, which are numerous and varied.

1. He Must be a Clinician.

The dermatologist must first of all be able to make a clinical diagnosis of skin affections, be able to distinguish a psoriasis from secondary syphilis, an eczema from a lichen, etc., This knowledge will be obtained through daily clinical observations of patients and a thorough knowledge of elementary lesions.

The study of eruptive elements, which, through their repeated appearance or their association with each other, constitute all the dermatoses, is of the utmost importance. They are in a manner the alphabet of dermatology. One must learn to read on the skin the numerous signs of a diseased organism.

2. He Must be a General Pathologist.

The dermatologist must be a physician. After having made the clinical diagnosis of the cutaneous affections he must carefully study the antecedents and the present condition of the patient and also examine all the organs and functions, so as to gather information which will be helpful in the diagnosis and treatment.

The causes which can modify the aspect of a dermatosis are numerous. The individual, first of all. The same cause can have quite different effects, according to the general condition of the patient. The general or focal infections. The influence of the localization of focal infection on the ripening and evolution of many dermatoses is often very evident.

These focal infections vary: the jaws, tonsils, nasal chambers, sinuses, appendix, the genito-urinary organs come into thought. We frequently notice that pruritus, prurigo, alopecia areata, eczemas, chronic urticaria, are cured with the disappearance of these focal infections. The part played by disorders of general nutrition is also important, particularly in the excretory organs, the digestive, circulatory, hæmatopoietic, endocrine, and neuro-sympathetic systems. We wish also to mention the importance of metabolism findings, the phenomena of sensitization, of allergy, anaphylaxis, and of colloidoclasy whose influence is more and more evident in a great many skin affections.

3. He Must be a Physiotherapist.

During the last few years physio-therapy has made wonderful progress. Physical agents are now more and more employed in all fields of medicine, but we believe that it is to dermatology that they will render the greatest service. Carbon dioxide, electrolysis, ionization, ultra-violet rays, x-rays, radium, high frequency currents, produce every day wonderfully successful results in cases where medicinal treatment, internal or external, has proved inadequate. The part played by the x-ray is particularly important. There are about eighty dermatoses which can be treated by means of the x-ray, and many among these can be cured by it only.

We wish to state also that these cutaneous affections, when related to physiotherapy, should

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be treated by a dermatologist and not by a general physiotherapist (professional radiologist or electrologist). In our opinion, the latter is not sufficiently familiar with the dermatological affections to be able to treat them properly.

We wish also to call attention to the fact that cutaneous cancer and the precancerous affections must be treated by proper physical agents. There exists no medical treatment for these lesions. Formerly they were within the province of the surgeon. We believe that surgical intervention, far from being the best method, on the contrary can become, in the case of metastatic cancers, a mean by which the disease will spread rapidly. However, with the exception of a few special cases, there are not many surgeons who still practice these interventions since they have recognized the superiority of physiotherapy.

4. He Must Have a Knowledge of Laboratory Findings.

The dermatologist must have a knowledge of bacteriology and of mycology. Owing to the latter we now know that many eczematoid reactions are due to certain bacteria or fungi. A new chapter has been added to our knowledge during the last few years on this subject.

Bio-chemical analyses of the urine, blood, spinal-fluid, sometimes disclose a functional disorder and enlighten us as regards the pathology of a cutaneous reaction. Finally, anatomo-pathology can every day render us great services, since biopsy is always possible in dermatology. Through histo-pathology we are able to note the internal structure of a lesion, to confirm or invalidate a clinical diagnosis. In certain cases where the affection has become unrecognizable, spontaneously or on account of intervention, it is the only means to detect its nature. To make a biopsy is to make a sort of autopsy on a living person (Darier). By means of the microscope we are able to view in all their dimensions particles of matter that are not discernible to the naked eye.

Nearly all that we have just mentioned concerning dermatology is alike applicable to syphilology. The latter is no more what it formerly was. Its pathology and therapy have been completely revolutionized by recent researches.

The discovery of *Treponema pallidum* by Schaudinn and Hoffman renders possible, through the ultramicroscope, the early diagnosis of syphilis. This new laboratory procedure, by which the existing infection can be traced long before the appearance of the clinical and serological signs, can render the greatest service to the syphilitic.

The Bordet-Wassermann serum-reaction facilitates the diagnosis and guides the treatment. Owing to this reaction it has been easy to recognize the specific nature of numerous affections whose etiology up till then had not been clearly defined. We now know that all cases of general paresis, of tabes, three-quarters of the cases of angina pectoris, one-half of all aneurysms and arterial affections, one-third of the cerebral hæmorrhages and of all the heart diseases, one-fifth of the cirrhosis of liver and kidney diseases, nearly all the cancers of the tongue, etc., are really due to syphilis and can benefit from antisyphilitic treatment, provided it is started in time. We have been enlightened on problems of the greatest importance in the case of hereditary syphilis. Errors which were believed to be indisputable truths have been dispelled. The famous laws of Colles and Propheta have been completely undermined, since examination of the blood has revealed that mothers and children, clinically immune, were syphilitics serologically. Latent syphilis has disappeared, replaced by that period rightly called by Hazen "endosyphilis." It has long been thought that the treponema was only active at various intervals, with periods of rest more or less prolonged. The grave error and danger of this theory have been demonstrated by the lumbar puncture practised in those cases which showed no clinical signs and whose Wassermann was even negative in the blood. The alterations noticed in the spinal fluid focus the attention upon the continued activity of the micro-organism, long before the appearance of the clinical signs, when the damage is not yet irreparable.

Parasyphilis does not exist any more, since the live treponema has been found in the brain of those suffering from general paresis, and since animals have been successfully inoculated with the spinal fluid of tabetics.

Lastly, our therapeutic resources have been endowed during these last few years by the addition of new drugs, arsenical compounds, salts of bismuth, malaria-therapy, all of them far more active than other drugs used formerly,

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the use of which considerably improved the prognosis of syphilis. We wish to point out here the excellent results obtained by malaria-therapy in the treatment of nervous syphilis, and especially of general paresis. The evolution of this syphilitic meningo-encephalitis, considered as unrelenting until these last few years, is now checked in about 40 per cent of the cases. Malaria-therapy should also be applied in cases that are Wassermann-fast, in order to prevent them from reaching the nervous stage of syphilis. The value of Von Jauregg's method is priceless. We would suggest its more frequent use in our clinics of syphilology.

The syphilologist, as the dermatologist, must be a clinician and a general pathologist, he must have a knowledge of laboratory findings, and must strive to become an accomplished therapist. Examining a patient with a cutaneous rash, he will not content himself with a blood test and wait for the laboratory report before making a decision. He must be familiar with all the subtleties of clinical diagnosis, and be able to distinguish an eczema from a macular syphilide, a tuberculous gumma from a luetic tubercle. He must, of course, be able also to interpret the findings of the various laboratories, anatomo-pathological, serological, bacteriological, radiological, so valuable in syphilology. He must be a general pathologist and be able to diagnose a visceral lesion caused by treponema, to recognize an aortic insufficiency, the onset of an aneurism, the very first symptoms of an affected central nervous system, an endocrine disorder, etc. Before undertaking the treatment he has to thoroughly examine all the organs of the patient and should make sure of their proper functioning. He must take unto consideration the individual characteristics inherent in each patient, which can react on the principal disease. In a word, to treat syphilis perfectly one must first be a real internist. He is the one who can give the most appropriate treatment and who can cure the greatest number of syphilities.

CONCLUSIONS

1. Dermatology and syphilology are absolutely bound together. They form one specialty: Dermato-syphilology.

2. Urology and syphilology are two totally different specialties. Their bonds have been united long enough. The sooner they are divorced from each other, the better it will be for the specialist and the patient.

3. Dermato-syphilology should not be relegated to the second place, under the ascendancy of medicine or surgery. It should be regarded and dealt with as one of the most important specialties of medicine, as is understood in nearly all European universities.

4. The teaching of dermato-syphilology must be organized in such a way that the essential knowledge of how to treat the most common dermatoses and especially to recognize at their onset tuberculosis, syphilis, cancer of the skin, be given to medical students, who must undergo a compulsory course of study in this specialty, and also to practitioners, by means of post-graduate courses.

5. The ideal organization of a clinic of dermatology and syphilology in a University hospital is undoubtedly the one which forms a complete unit, having entire autonomy, with anatomo-pathological, serological, mycological, bacteriological, bio-chemical and physiotherapeutical laboratories attached, and also possessing a staff able to recognize and treat all cases of syphilis and skin diseases.

In closing, may we be allowed to express the hope that all universities of the Dominion will follow the example set by the University of Montreal and the Nôtre Dame Hospital, who have already realized this ideal, and will share in training practitioners who will become a wonderful help in the campaign undertaken in all countries to combat cancer, syphilis, tuberculosis, three scourges which threaten the individual, the family and the race.

G. Petenyi describes the appearance in measles, one or two days before the eruption on the Kopklik spots, of small petechial hæmorrhages on the buccal mucosa. In number, there were 3 to 8 on the buccal portion; a greater number on the gums, up to 20. They remained two or three days. In 14 cases of measles, observed during the early period of incubation, these hæmorrhages were found in six.—*Orv. Hetil.* **73:** 1929.

Case Reports

A CASE OF CONGENITAL HYPERTROPHIC PYLORIC STENOSIS IN A MAN AGED SEVENTY-TWO*

BY F. D. ACKMAN, M.D.,

Montreal

Cases of hypertrophic pyloric stenosis of congenital origin in adults have been described in the current literature from time to time, and indeed this condition is referred to in most of the standard text-books. Unfortunately, disagreement regarding the congenital nature of the lesion has lead to confusion with other forms of pyloric obstruction. While some writers, including such an eminent pædiatrician as Richter,[1] have accepted the congenital view, other authorities have found it difficult to do so.

Among the earlier descriptions of the condition, that of Maier[2] in 1885 is probably the best. This writer properly distinguished the lesion from other pyloric obstructive conditions. His conclusions were based on autopsies on 31 cases that came under his personal observation, and the records of these appear in his article. The ages varied from 12 to 80 years, but most of them were well advanced in adult life. There were 26 males and 5 females, a ratio notably corresponding closely to that in infants. The history in all cases showed a marked similarity. Practically all had, from early infancy or childhood, suffered from attacks of epigastric pain accompanied by vomiting. Frequently there was distension, epigastric discomfort, and eructations of gas after meals. The characteristic pathological findings were: a greatly dilated stomach with a funnel-shaped narrowing of the antrum leading into a constricted zone, 2 to 8 cm. in length, corresponding to the pyloric canal. To this shape of the stomach, antrum and pyloric canal, Maier applied the term "trichterförmig" (funnel-shaped). The pyloric sphincter was always hypertrophied and very firm, with a marked narrowing of the orifice. In some cases the diameter of this opening was not more than 2 to 3 mm. In the younger cases the gastric musculature showed hypertrophy throughout. In the more elderly, however, while this hypertrophy persisted in the antrum and pyloric canal, the muscularis of the body of the stomach always showed marked atrophy. The mucosa in the pyloric canal was frequently thrown into folds which added to the obstruction. Microscopic examination consistently showed hypertrophy and hyperplasia of the muscularis of the antrum and pyloric canal to be principally confined to the circular fibres. In only a few of the cases was there an increase in fibrous connective-tissue. In none of the cases was there any evidence of a previous ulcerative or inflammatory lesion.

Bassler,[3] in 1920, described two cases found at autopsy, one in each sex. In both of these he traced the symptoms to infancy. This writer stressed the point that the diagnosis is rarely made clinically, not so much on account of its great difficulty as because the condition is rarely thought of.

Two cases have also been described by Maylard.[4, 5] The last one, in 1920, was diagnosed as malignant at operation and a resection was carried out. The patient unfortunately died of intercurrent pneumonia, and Maylard naturally expressed regret that he had not performed a simple gastroenterostomy. In this connection it should be pointed out that pneumonia following gastroenterostomy for the relief of chronic cicatricial pyloric stenosis is the commonest cause of death. In this case the lesion, and not the type of operation, was probably the predisposing factor.

Further, cases have been described by Landerer,[6] Russel,[7] and others. All writers are in agreement regarding the etiology and pathology of the lesion, and all feel that it is not so uncommon as may be supposed.

A case has come to the attention of the Pathological Department of the Montreal General Hospital, through the courtesy of Dr. H. R. Clouston of Huntingdon, P.Q., in whose practice it occurred.

* From the Pathological Laboratory, The Montreal General Hospital, Montreal.

Read before the Canadian Medical Association, at Montreal, June, 1929.

CASE REPORT

The patient, R.G., was a retired farmer, aged 74. His earliest history—which is so important—was not easily obtained on account of his age, and was not very clear. Such as was obtained was learned chiefly from his relatives. These all stated that he was a notoriously difficult baby to raise and always appeared undernourished. As a young boy he suffered frequently from attacks of "stomach trouble", many of which were severe enough to require immediate medical attention. No further information about his infancy and early childhood was obtainable. The patient himself stated that, as he grew older, he continued to remain underweight, and to suffer from attacks of colicky pain in the epigastrium, which were partly controlled by diet. From the age of thirty-five onwards these attacks became gradually more frequent, almost periodical, and were often associated with vomiting of an explosive type. Sometimes, when particularly careful about his diet, however, he had free intervals of as long as one year. At fifty-four years of age he was sent to Saranac, suffering from pulmonary tuberculosis. After six months there he was discharged, as an arrested case. He continued however to have a certain amount of cough and expectoration at times, during the remainder of his life.

When he was fifty-nine there occurred a noticeable increase in frequency and severity of his epigastric pain, and vomiting also occurred more often. When sixty-four, he had an unusually severe attack while en route to California, and had to be taken from the train to a hospital in El Paso, Texas. From this time onwards the symptoms steadily became worse, in spite of treatment. The attacks of pain came on mostly at night. Sometimes they began with general abdominal colic, but pain always finally localized in the epigastrium, and was associated with a sensation of fullness. Because vomiting always relieved the pain, he frequently induced it. When it came on while in bed he was sometimes relieved by sitting up. Anorexia, constipation, and emaciation all became marked. The patient stated emphatically that, beyond the occasional use of morphine for pains, no medication ever helped him.

Physical examination at the time of his last illness revealed an elderly male who was very weak, pale, and emaciated. The abdomen showed no abnormal rigidity, no points of tenderness, and no palpable masses. Percussion, however, revealed a very much dilated stomach. Urinalysis showed albumin and casts. A bedside barium series was attempted. The first plate showed a large ptosed stomach. The lowest point of the lesser curvature was below the level of the anterior superior spines. There was a pre-pyloric bulging in the greater curvature. Unfortunately, the meal was vomited before further plates could be taken. It was soon apparent that, besides a reactivation of his pulmonary trouble, the patient had a pyloric obstruction which was increasing in severity and already endangering his life. About this time the patient was seen by Dr. W. F. Hamilton, of Montreal, who corroborated Dr. Clouston's findings. All forms of diet failed to prevent the vomiting, and this finally became so frequent that he died of inanition on June 27, 1928.

Autopsy findings.—The stomach was extremely large, ballooned out with gas, and contained a large amount of fluid. There were no perigastric or peripyloric adhesions. Most of the antrum tapered in a funnel-like fashion to a narrow zone at the pylorus, 2 to 3 cm. in length. The pyloric ring itself was very firm and constricted. The orifice would only admit the tip of a lead pencil, and, when an attempt was made to test its patency with water, only a thin stream could be forced through. It measured less than 3 mm. in diameter. On opening this and the stomach, the sphincter pylori was found to be a hard, resilient, pale, cord-like structure 0.5 cm. in diameter. So firm was this that it felt almost cartilaginous. It was not unduly adherent to the adjoining tissues and the mucosa over it showed no scarring nor evidence of ulceration. The wall of the antrum showed a greatly thickened musculature, while the mucosa here was also intact. Towards the pylorus it was thrown into folds which added to the obstruction. There was a prepyloric diverticulum in the greater curvature 3 cm. in diameter and of the same depth. The wall of the remainder of the stomach was greatly thinned out and inelastic, while here the mucosa was atrophic. Nowhere in the mucosa of the stomach and duodenum was there any evidence of old or recent ulceration. See Fig. 1.

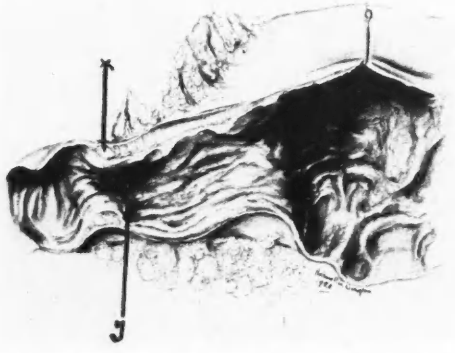

FIG. 1.—The pyloric portion of the stomach and first part of the duodenum laid open, showing the funnel-shaped antrum, narrowed pyloric ring, and the hypertrophied muscularis of the antrum and sphincter pylori. X—indicates the sphincter pylori. Y—marks the opening of the prepyloric diverticulum.

Sections for microscopical examination were stained with hæmatoxylin-eosin, phosphotungstic acid, Van Gieson's stain, and by Mallory's connective-tissue method. The hypertrophied sphincter was found to consist almost entirely of muscle fibres, with surprisingly little fibrous connective-tissue. The longitudinal fibres were not especially hypertrophied. The mucosa showed well formed glands extending fairly deeply. About the bases of these there were scattered areas of small round celled infiltration, but no especially increase in connective tissue. The lymph follicles were somewhat large, but the germinal centres were not unduly prominent. (See Fig. 2).

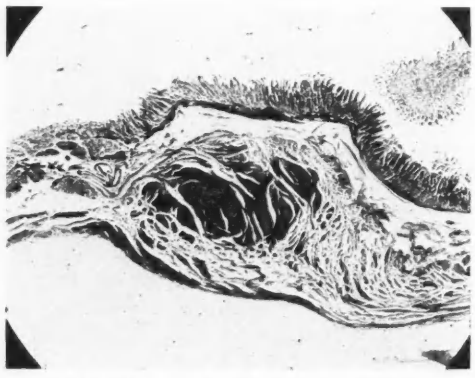

FIG. 2.—Planar microphotograph of longitudinal section through the wall of the pyloric canal, showing the greatly hypertrophied sphincter pylori and adjoining gastric muscularis. The mucosa is seen to be intact with some hypertrophy of the muscularis mucosae.

Section of the antrum showed hypertrophy and hyperplasia of the circular coat only. The mucosa here showed a slight amount of small round celled infiltration, but was otherwise intact. (See Fig. 3).

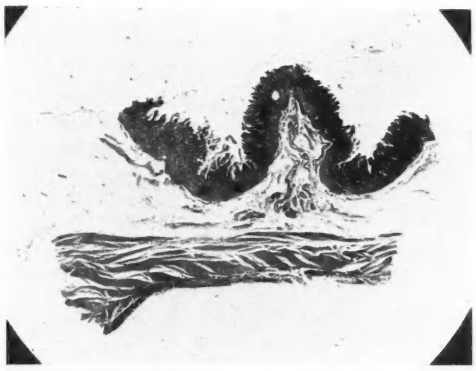

FIG. 3.—Planar microphotograph of section from the wall of the antrum for comparison with Fig. 2. The muscularis here also shows considerable hypertrophy. The mucous membrane is intact.

Sections from the dilated body wall showed all the coats thinned out and atrophic, with here also a slight small round celled infiltration in the mucosa. (See Fig. 4).

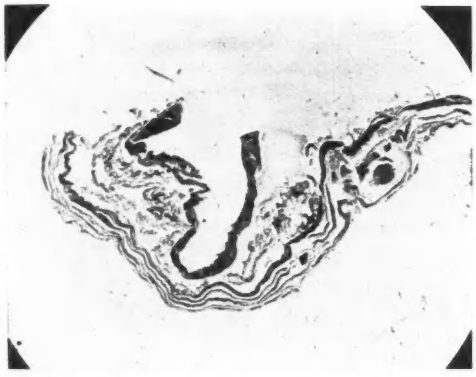

FIG. 4.—Planar microphotograph of section from the wall of the fundus for comparison with Figs. 2 and 3. All the coats show atrophy.

DISCUSSION

It is many years since Maier so ably brought this lesion to the attention of the profession, and yet very few cases have since been recorded. The excellent series of 31 cases presented in Maier's report makes it appear that there has either been a failure to recognize the condition, or more likely, as Bassler has suggested, that it is not looked for. According to these writers, it is not at all so uncommon as it would appear to be. Possibly it has been frequently confused, clinically, with other forms of pyloric obstruction, such as stenosing gastritis, or with other conditions such as megalogastria. Careful inquiry into the childhood history should, in the majority of cases, give one a lead, while megalogastria shows no such long delay in the emptying of a barium meal as does this condition.

As has been before mentioned, the congenital origin of the lesion has been doubted by some writers, though on what grounds is not quite clear. In view of the comparatively frequent incidence of congenital pyloric stenosis in infants, it seems quite conceivable that some, at least, of the less marked cases should go on to adult life. The burden of proof that such is not the case would appear to rest upon the shoulders of those who doubt. Certainly, the pathological findings argue most conclusively for this etiology, and these, together with the history and clinical findings, leave small room for doubt.

TREATMENT

Ample evidence has accumulated to show the futility of prolonging medical treatment. Atropine and other anti-spasmodics are equally ineffective. Surgical measures are consequently indicated as in other forms of organic pyloric obstruction. The choice of procedure to be carried out will be determined by the individual case. When the condition is evident to the operator, some form of a pyloroplasty or a gastroenterostomy will probably be sufficient. That difficulty may be experienced, however, in ruling out ulcer or malignant changes is well illustrated in Maylard's last case. In such instances, of course, resection is an entirely justifiable procedure. It is doubtful if a simple Rammstedt procedure would suffice in any of these cases, particularly if there is marked atrophy of the gastric muscularis as in the more elderly.

SUMMARY

1. That congenital hypertrophic pyloric stenosis may go on to adult life before becoming a serious problem is well recognized.

2. Such a case, with typical lifelong history, clinical and pathological findings, is here reported.

3. This condition is probably more common than is generally thought.

4. The history and x-ray findings should go a long way towards ruling out other confusing conditions.

5. Surgical treatment is indicated, the nature of which will depend on the individual case.

REFERENCES

1. RICHTER, H. M., Abt's System of Pediatrics **3:** 451, 1924.
2. MAIER, R., *Virchow's Arch.* **102:** Heft. 3, 413, 1885.
3. BASSLER, A., Diseases of the Digestive System, Davis, Phila. **1:** 684, 1922.
4. MAYLARD, A. E., *Tr. Roy. Med. Chir. Soc.*, Glasgow, 14-16, 143, 1919-22.
5. MAYLARD, A. E., Practice and Problems in Abdominal Surgery **14:** 388, J. & A. Churchill, London, 1913.
6. LANDERER, R., *Deutsches Arch. f. klin. Med.* **93:** 363, 1908.
7. Osler's System of Medicine **3:** 467, Lea & Febiger, Phila., 1926.

A CASE OF FIBROMYOMA OF THE FALLOPIAN TUBE WITH TUBERCULOSIS*

BY ELEANOR PERCIVAL, M.D.,

Montreal

Fibromyoma of the Fallopian tube is a very rare condition, only thirty-one cases having been reported, but the occurrence of tuberculosis in a tubal fibroid is even more uncommon.

The patient, a single white female, 39 years of age, was admitted to the Montreal General Hospital, on April 6, 1929, in the service of Dr. Montgomery, complaining of general malaise. For the past eighteen months, she had been growing progressively weaker; her work fatigued her greatly and the least exertion caused palpitation and dyspnœa. There had been some indigestion with belching of gas after food, but on the whole her appetite was fair. Night sweats had occurred occasionally, and there had been a loss of weight from 106 to 94 pounds in a year. The menses, although formerly regular and profuse, had for the past two years occurred every two weeks, with a scanty flow.

General examination revealed a very tired, pale, sallow young woman, whose temperature varied from 98° to 101°. Except for a slightly enlarged spleen, detailed examination of chest and abdomen, was negative. X-ray examination of the chest, the Von Pirquet test, and urinalysis were also negative. The blood count showed a rather marked secondary anæmia.

The pelvis was filled by a large firm non-sensitive tumour which lay across Douglas' cul-de-sac, while the uterus was small and mobile in front.

Although splenic anæmia had to be considered, a diagnosis of pelvic new growth, either tuberculous or malignant, was made, and operation advised. A supracervical hysterectomy was done, by splitting the uterus in the midline and removing each half of it along with its tubo-ovarian mass.

The patient made an uninterrupted recovery, the temperature falling to normal immediately after the operation.

In the drawing of the pelvic organs (Fig. 1), two markedly dilated, retort-shaped tubes are seen, one of which, on cut section, shows a solid tumour. The tumour, which was in no way connected with the ovary, had a lobulated surface, and was covered by the same lining membrane as the remainder of the tube. It was made up of two parts; the smaller section presented a white fibroid-like growth, with a tendency to

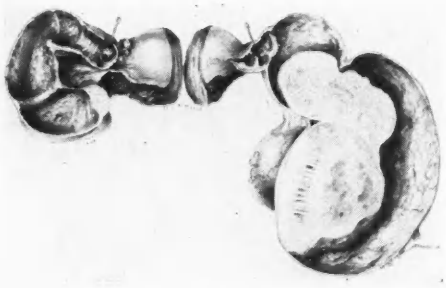

FIG. 1

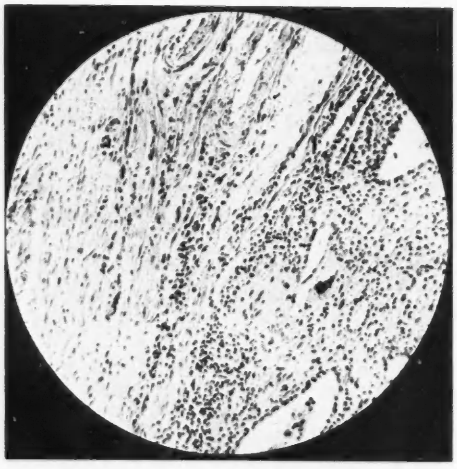

FIG. 2

* From the Gynæcological and Pathological Departments of the Montreal General Hospital.

whorl formation, while the remaining two-thirds composed of a yellow friable, and more necrotic, myxomatous tissue. The uterus was normal, grossly, and also the left ovary, while the right ovary had undergone cystic changes. The opening into the right tube from the uterus was patent, whereas that on the left side was closed.

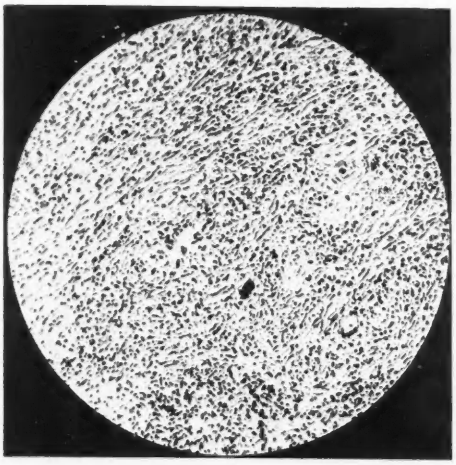

FIG. 3

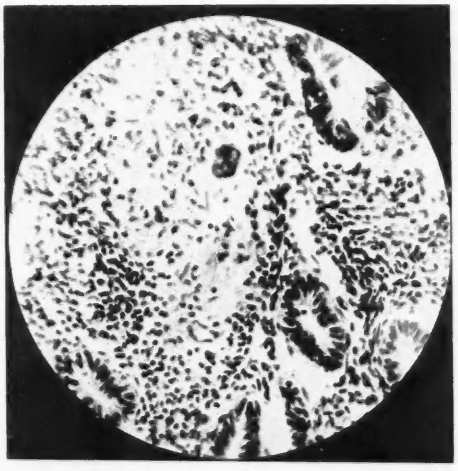

FIG. 4

Microscopically, one saw in sections of both tubes numerous giant cells and tubercle formation. The large mass (Figs. 2 and 3) was made up of interlacing long, narrow cells, scattered through which are the typical giant-cells. The larger and more necrotic-looking mass had undergone caseation, as a result of a more longstanding tuberculous infection. It is interesting to note that in the endometrium near the patent right tube (see Fig. 4), a definite tubercle could be seen, while careful search elsewhere in the uterus showed no evidence of this lesion.

We are, therefore, dealing with a case of bilateral, tuberculous hydrosalpingitis, complicated by a large tubal fibromyoma extensively involved in tuberculous disease, and which had undergone, in part, caseous degeneration.

A CASE OF VOLVULUS OF THE STOMACH WITH CONGENITAL ANOMALIES OF DEVELOPMENT

BY J. A. GORRELL, B.A., M.D.,

Winnipeg

I desire to present for record a case of volvulus of the stomach, occurring in a child.

N., 10 months old, male, was referred to me by Dr. J. A. McTavish on Feb. 26, 1928. The baby was breast-fed, and looked the picture of health. The bowels were regular. The child had suddenly taken ill with severe pain and cried out. After an hour he vomited. He used to turn over on his stomach and proceed to crawl ahead, which apparently seemed to relieve him. An enema was given and there was a slight movement, with a speck of blood. The temperature was normal; pulse, 120. A small amount of ether was administered and physical examination revealed a mass in the upper abdomen. He became very dehydrated. A diagnosis of intussusception was made and he was taken to the Children's Hospital, six hours after the onset of symptoms.

At operation an upper right rectus incision was made, and a very much dilated stomach was found, which appeared like a cyst, about the capacity of a quart. It was half filled with fluid and half filled with gas. A catheter was passed and the fluid and gas were drawn off. The stomach then collapsed. On lifting it up it could be seen that it was rotated from right to left on a vertical axis passing through the cardiac orifice. The duodenum was wound one complete turn around the pyloric orific, causing complete pyloric obstruction. The stomach was rotated from left to right and then both its orifices became normal. The patient lived fourteen hours after the operation and continued to vomit during that period.

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We obtained permission to do a limited post-mortem (opening up the incision). Congenital abnormalities were present. The great omentum was about one inch long but did not contain the transverse colon. The transverse colon was attached behind the stomach to the posterior abdominal wall by a mesentery of its own. The gastro-hepatic omentum was about five inches long and it allowed of the stomach being very mobile. The spleen was attached to the posterior part of the cardiac end of the stomach and was supplied by the arteriae gastro-epiploica sinistra and dextra. The pancreas lay in its normal position and received its blood supply directly from the cœliac axis. The common duct was normal.

As this is a rare case I think it worth reporting.

Retrospect

RHEUMATIC FEVER

By L. C. MONTGOMERY, M.D.,

Montreal

During the past year there has been evidence of a remarkable renewed interest in the study of the varous phases of rheumatic fever. A special conference was held on the subject in Bath,[35] and a symposium[36] on the same subject was held at the annual meeting of the Association of American Physicians in Washington, May, 1928.

From reading various articles one gains the impression that the importance of the general infection is being more widely recognized, and that the presence of a polyarthritis as the essential feature for a diagnosis is being no longer required.

Veil[45] contends that the fully developed picture of rheumatic fever includes pancarditis, pleurisy, broncho-pneumonia, peritonitis, swelling of the liver, enlargement of the spleen, and nephritis, in addition to polyarthritis. He reminds us that many cases of chronic arthritis have their beginnings in a polyarthritis that cannot be distinguished clinically from typical articular rheumatism.

Benzançon and Weil[1] feel certain of the infectious origin of rheumatic fever but that a definite causative agent has not yet been isolated. They doubt the existence of the arthritic diathesis, either in the patients themselves or in their families, and quote figures to prove their point. They find that the incidence of rheumatic fever in the entourage of rheumatic patients is twice as great as that in the non-rheumatics. They believe that the general point of view in regard to acute rheumatic fever should be completely changed; that we should not consider the disease as consisting of a series of acute lesions, first articular and later cardiac, but rather as a true chronic disease similar to tuberculosis, syphilis, or malaria. These authors think that the reservoir of the rheumatic virus is the heart (the endocardium, pericardium and particularly the myocardium). They consider that, pathologically, rheumatic infection resembles tuberculosis, malaria and syphilis, in that the final picture is scarring rather than ulceration. They emphasize the fact that sometimes the joint manifestations are negligible, but that the heart involvement may be quite marked.

STATISTICAL STUDIES

Wilson, Lingg and Croxford[47], in a series of 500 children with heart disease, studied during a period of ten years, found that in four-fifths of the cases rheumatic fever was the etiological factor. Growing and joint pains seemed to bear just as close a relationship to the severity of heart involvement as did polyarthritis.

Miller[29] feels that environment taken as a whole is of such importance in the production of juvenile rheumatism that the disease may be regarded as an environmental disease. To alter the environment of children is sufficient to prevent the appearance of the disease. Of the environmental factors at work, the two principal ones are poverty and dampness.

McSweeney[7], in Cardiff, compared 214 rheumatic with 116 non-rheumatic school children, and found no differences in the size of the tonsils or the history of sore throats in the two groups. Vining[46], like Miller, thinks that a subnormal state of nutrition is the most important predisposing factor, and that the actual rheumatic attack is caused by streptococci which invade the body through a weakened defence.

Houston[15] has shown that rheumatic fever, in the southern United States, runs a milder course than is usually encountered in the northern States and Canada.

Lyon and Gilchrist[25] found that 4 per cent of medical cases in a general hospital are of rheumatic nature; 50 per cent to 60 per cent of all cases of heart disease are attributable to rheumatic infections. This has not been reduced during the past 50 years. Endocarditis will occur in 30 to 40 per cent of rheumatic cases; it may be as high as 70 to 90 per cent in young people. These authors also stress the fact that the occurrence of cardiac damage bears no relationship to the severity of other symptoms. There is no immunity following an attack.

ETIOLOGY AND BACTERIOLOGY

Small[38] and Birkhaug (quoted by Small) believe the indifferent streptococcus to be the chief or sole etiological agent of the disease. Hitchcock[13] has found that this organism occurs just as frequently in the throat flora of non-rheumatic as of rheumatic patients.

Swift, Derick *et al.*[41] favour the theory that the supposedly specific rôle of any organism in rheumatic fever is of less importance than a general allergic background, on the basis of which a variety of organisms may, through some common factor, produce comparable effects. Zinsser and Yu[48] regard the allergic state as part of the immunological mechanism, and, as a result of skin tests by Kaiser[18] with a filtrate of Birkhaug's indifferent streptococcus, they believe that the sensitiveness to streptococcal products is largely a function of age, the sensitiveness increasing with age, and, in addition, that in patients with rheumatic fever there is a disproportionate heightening of this sensitiveness.

Practically all workers are agreed that only infrequently is there a demonstrable bacteriæmia in cases of acute rheumatic fever. Of the organisms which have been isolated, the green producing streptococcus has been the only one consistently identified. Le Bourdelles[21] isolated a non-hæmolytic streptococcus in two subcutaneous nodules removed from a patient suffering from rheumatic fever and rheumatic carditis.

PATHOLOGY

The contributions to the pathology have dealt largely with the vascular lesions of the disease, and have emphasized more clearly than ever that the lesion is primarily one of blood vessels. The lesions described vary from diffuse cellular infiltrations in the intima and subintimal layers of the media to focal perivascular cellular aggregates, comparable to Aschoff bodies. These have been found in the thoracic and abdominal aorta and its larger branches, in the periaortic tissue, in the pulmonary artery, in the pulmonary valves, and at the pulmonary musculo-arterial junction.

Naish[31] describes a form of bronchopneumonia in rheumatic fever, the lesions of which appear identical with those of rheumatic fever elsewhere in the body.

SYMPTOMATOLOGY

Several workers have noted the mildness or occasional absence of arthritis in children, the marked tendency to cardiac involvement, and the constantly occurring œdema.

Swift and Hitchcock[42] refer to the occurrence of præcordial pain with rheumatic fever, and speak of its generally indicating cardiac involvement. They found that freedom from cardiac pain did not insure freedom from cardiac involvement, but, on the other hand, the great frequency with which the two occurred together indicated that in a patient suffering from rheumatic fever the presence of such pain is a significant indication for special care in safeguarding the heart. It has, again, been shown that in the majority of cases of acute rheumatic fever the electrocardiogram shows a lengthening of the P-R interval.

Attention has again been drawn to the association of subcutaneous rheumatic nodules with a severe carditis, an association which would seem to indicate a poor prognosis. The nodules seem to occur more frequently during some years than others.

The rate of sedimentation of the red blood cells in rheumatic infection has been worked out. It averages 100-120 mm in one hour in the acute stages; 60 to 80 mm per hour in the subacute; and gradually returns to normal 20 to 30 mm per hour as recovery takes place. Kahlmeter[17] considers that no patient should be regarded as recovered until the sedimentation rate has reached normal. The sedimentation time is increased in all inflammatory reactions.

TREATMENT

The necessity for prolonged medical supervision has been emphasized by all workers. The logic of this view seems indisputable in view of the chronicity of the disease. Poynton stresses the need of special institutions for rheumatic children.

McCulloch[26] considers the following criteria as necessary before deciding as to the activity or inactivity of the disease. Apart from the usual considerations of temperature, pulse rate, and absence of the common gross signs, there should be,—gain in weight; good exercise tolerance; absence of undue fatigability; a normal white blood count; a normal or nearly normal red blood count; a normal systolic blood pressure; a pulse pressure of 50 mm or less, except in case of aortic insufficiency; a normal vital capacity; a stationary or decreasing heart size; absence of skin manifestations; quiescence of foci of infection.

As regards salicylates and their action there is still a divergence of opinion after fifty years' usage. Some contend that they have a specific action, and others that they are simply antisymptomatic. Statistics show that neither the stay in hospital nor the average duration of illness is shortened by use of salicylates. However, the character of the disease does seem to be modified. It is questionable whether they exert any influence in the prevention of endocarditis. In resistant cases, the intravenous method of giving salicylates has been recommended. Five per cent of sodium salicylate dissolved in a 10 per cent solution of glucose is prescribed, doses of 1 or 2 grams daily are given.

During the past year there has been considerable discussion concerning the question of tonsillectomy and rheumatic fever. Certain workers report the occurrence of severe chorea and heart disease following tonsillectomy. They feel that the removal of the tonsils must precede the cardiac involvement. Bourne[3] recommends tonsillectomy in the presence of (1) a history of sore throats; (2) lymphadenitis; (3) evidence of tonsillar disease. Robey[37] is rather more opti-

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mistic than the majority. He considers tonsillectomy to be as safe during the stage of acute arthritis as later, and feels that it has the advantages at this period of reducing the risk to the heart and of definitely shortening the course of the disease. However, most workers feel that an operation during the acute stage is attended with more risk than later. They have noted that a number of patients have shown marked exacerbation of cardiac and arthritic symptoms following simple manipulation of the tonsils.

Small[39] is convinced that he obtains relief of rheumatic fever and of chorea by the use of his *streptococcus cardio-arthritidis* serum. The dosage has to be carefully watched.

Bodenstab[2] treated 28 patients with pyramidon (antipyrin group) in doses of 2 to 3 grams daily. Favourable results were obtained in all instances, in fact five patients who had failed to respond to salicylates, experienced prompt relief when the change to pyramidon was instituted.

Dalichow[9] employed intramuscular injections of aristosan (a mixture of formic acid with a thiocin derivative) in the treatment of sixteen patients. As a rule, improvement occurred after the second or third injection, even in persons who had been resistant to salicylate. No ill effects were noted.

In conclusion, one might say that, as regards treatment, certain drugs may show a slight advantage the one over the other, but the essential thing in acute rheumatic fever is prolonged bed rest following the first attack, measured not in weeks but in months. Associated with this there should be plenty of fresh air and sunshine and a well balanced diet.

REFERENCES

1. BEZANÇON, F., AND WEIL, M. P., *Lancet* **1:** 1002, 1928.
2. BODENSTAB, R., *Deut. Arch. f. klin. Med.* **159:** 171, 1928.
3. BOURNE, G., *Lancet* **2:** 217, 1928.
4. CARR, J. G., AND REDDICK, W. G., *J. Am. M. Ass.* **91:** 853, 1928.
5. CHIARI, H., *Beitr. z. path. Anat.* **80:** 336, 1928.
6. CLARKE, J. T., *Proc. Roy. Soc. Med.* **21:** 1004, 1928; also in *M. J. & Record* **128:** 457, 1928.
7. CLAWSON, B. J., *Am. J. Path.* **4:** 565, 1928.
8. COOMBS, C. F., *M. J. & Record* **128:** 463, 506, 1928.
9. DALICHOW, K., *Münch. med. Wchnschr.* **75:** 1924, 1928.
10. FARNUM, W. B., *Am. J. M. Sc.* **176:** 474, 1928.
11. GIROUX, R., AND KERVAREC, L., *Bull. méd.* **42:** 100, 1928.
12. GRENET, H., AND DELALANDE, J., *Arch. d. méd. d. enf.* **13:** 453, 1928.
13. HITCHCOCK, C. H., *J. Exper. Med.* **48:** 393, 403, 1928.
14. HOOKER, S. B., AND FOLLENSBY, E. M., *J. Immunol.* **15:** 601, 1928.
15. HOUSTON, A. N., *Med. Clin. North. America* **11:** 5, 1339, 1928.
16. IRVINE-JONES, E. I. M., *Arch. Int. Med.* **42:** 784, 1928.
17. KAHLMETER, G., *M. J. & Record* **128:** 467, 1928.
18. KAISER, A. D., *J. Infect. Dis.* **42:** 25, 1928.
19. KRIEDLER, W. A., *J. Infect. Dis.* **43:** 415, 1928.
20. KUGEL, M. A., AND EPSTEIN, E. Z., *Arch. Path.* **6:** 247, 1928.
21. LE BOURDELLÈS, B., *Compt. rend. Soc. de biol.* **98:** 599, 1928.
22. LEVY, R. L., AND GOLDEN, R., *Am. Heart J.* **4:** 127, 1928.
23. LUKENS, F. D. W., *J. Clin. Invest.* **6:** 319, 1928.
24. LYNCH, R., *Canad. M. Ass. J.* **17:** 1352, 1927.
25. LYON AND GILCHRIST, *Edinb. M. J.*, Aug. 1928.
26. MCCULLOCH, H., *J. Am. M. Ass.* **90:** 2073, 1928.
27. MCSWEENEY, C. J., *Lancet* **1:** 959, 1928.
28. MERRITT, K., *Am. J. Dis. Child.* **35:** 823, 1928.
29. MILLER, R., *Lancet* **1:** 1005, 1928.
30. MILLER, R., *Proc. Roy. Soc. Med.* **21:** 997, 1928.
31. NAISH, A. E., *Lancet* **2:** 10, 1928.
32. POYNTON, F. J., *Trans. Med. Soc. London* **51:** 313, 332, 351, 1928.
33. REID, W. D., AND KENWAY, F. L., *New Eng. J. M.* **198:** 177, 1928.
34. REITTER, C., *Wien. klin. Wchnschr.* **41:** 473, 1928.
35. Rheumatic Diseases, Proc. of Conference held at Bath, England, May, 1928.
36. Rheumatic Fever Symposium, *Trans. Ass. Am. Phys.* **43:** 174-241, 1928.
37. ROBEY, W. H., *New Eng. J. M.* **198:** 724, 1928.
38. SMALL, J. C., *Am. J. M. Sc.* **175:** 638, 1928.
39. SMALL, J. C., *Am. J. M. Sc.* **175:** 650, 1928.
40. SURANYI, L., AND FORRO, E., *Klin. Wchnschr.* **7:** 453, 1928.
41. SWIFT, H. F., DERICK, C. L., AND HITCHCOCK, C. H., *J. Am. M. Ass.* **90:** 906, 1928.
42. SWIFT, H. F., AND HITCHCOCK, C. H., *J. Am. M. Ass.* **90:** 678, 1928.
43. SWIFT, H. F., HITCHCOCK, C. H., AND DERICK, C. L., *Proc Soc. Exper. Biol. & Med.* **25:** 312, 1928.
44. THOMSON, A. P., *Arch. Dis. Childhood*, **3:** 20, 1928.
45. VEIL, W. H., *Deut. med. Wschnschr.* **54:** 1539, 1928.
46. VINING, C. W., *M. J. & Record* **128:** 351, 395, 453, 1928.
47. WILSON, M. G., LINGG, C., AND CROXFORD, G., *Am. Heart J.* **4:** 164, 197, 1928.
48. ZINSSER, H., AND YU, H., *Arch. Int. Med.* **42:** 301, 1928.

THE DOCTRINE OF SIGNATURES.—"Wall-nuts have the perfect Signature of the Head; The outer husk or green Covering, represent the Pericranium, or outward skin of the skull, whereon the hair groweth, and therefore Salt made of those husks or barks, are exceeding good for wounds in the head. The inner wooddy shell hath the Signature of the Skull, and the little yellow skin, or Peel, that covereth the Kernoll of the hard Meninga and Pia-mater, which are the thin scarfes that envelope the brain. The Kernel hath the very figure of the brain, and resists poysons. For if the Kernel be bruised, and moystened with the quintessence of wine, and laid upon the Crown of the Head, it comforts the brain and head mightily."—William Coles, in *The Garden of Eden.*

Clinical and Laboratory Notes

Tuberculosis: Simultaneous Demonstration of Tubercle Bacilli and Elastic Fibres

When there is plenty of sputum available about 4 c.c. of sputum is mixed with 10 c.c. of sodium hydroxide. With smaller amounts of sputum only 5 c.c. of normal hydroxide is used. This mixture of sputum and sodium hydroxide is heated over a water-bath for 20 minutes at a temperature not higher than 50,° stirring it lightly with a glass rod. It is then centrifuged. A smear of the sediment is allowed to dry, preferably in the incubator, and fixed in a flame. It is stained with carbol fuchsin, heated as usual, and washed; decolourized with 3 per cent alcoholic solution of hydrochloric acid, as usual, and washed; then stained one or two minutes with hæmatoxylin and cold saturated solution of lithium carbonate, each 1.0; absolute alcohol and distilled water each 20.0, and then washed. It is then decolourized with official iron-chloride solution for a few seconds and washed. With this method the tubercle bacilli are stained a beautiful red and greater numbers of them show than with the ordinary method. The elastic fibres are bluish-grey.—F. Jessen, *Beitr. für Klin. d. Tuberk* **65**: No. 4.

The Shaw-Mackenzie Test for Cancer

An investigation was carried out at the instance of the Departmental Committee on Cancer, Ministry of Health and of the Medical Research Council. 200 sera were examined by a modification of the Shaw-Mackenzie test; briefly, a stock solution of dry saponified extract of carcinoma is prepared. The p^H of this must be carefully adjusted to 7.4. Fresh serum must be used, which is collected with a glass syringe, and which should be taken not sooner than four hours after a meal. The test is carried out by using equal quantities of serum and a dilution of the stock solution of extract, the serum being first placed in the tube and the extract layered on to the top of the serum. The tubes of extract and sera are then incubated at 37° C. for 18 hours, and should stand at room temperature for one hour before attempting to read the results. The reading of the results requires some qualification, but essentially, the presence of a white ring at the junction of the two fluids denotes a positive reaction. The work is described as a preliminary investigation and a summary of the results shows that of 71 cases of malignant growths 49 gave positive tests, 5 doubtful, and 17 were negative. Epitheliomata of the skin all gave negative results. Some cases treated with lead, x-rays or radium and some advanced inoperable cases also gave negatives. Of 102 cases of various diseases, other than growths, 65 gave negative tests, 10 doubtful, and 18 definitely positive. Venereal disease, heart cases, nephritis, pulmonary tuberculosis, pregnancy, and menstruation are liable to give "wrong" positives.—Watchorn, *J. Hygiene* **29**: 71, 1929.

Cultivation of Tubercle Bacilli

Since guinea-pig inoculation is both costly and slow, H. J. Corper and N. Uyei have devised a special method for the identification of tubercle bacilli when these are present in small numbers in sputum, urine, or tissues. In order to destroy contaminating organisms the tuberculous material is incubated with an equal volume of 6 per cent sulphuric or 3 per cent hydrochloric acid, intimate contact being secured by centrifuging. They have obtained good results by subsequently planting the deposit on a medium comprising potato (autoclaved and subsequently ground), agar, glycerol, and crystal violet. A good growth of tubercle bacilli appears in from two to five weeks. The authors state that tests have proved this medium to be superior to that of Petroff, and as good as guinea-pig inoculation from the practical clinical standpoint. *J. Lab. & Clin. Med.*, p. 393, Feb. 1929.

A Simple Method of Obtaining Permanently Stained Preparations to Show Reticulocytes in the Blood

Joseph H. Wright in the *Glasgow Medical Journal*, p. 292, May, 1929, writes: "The ordinary methods of obtaining permanently stained preparations to show reticulocytes in the blood is unsatisfactory because of the unavoidable grouping and distortion of cells. The following modification has been used by the writer during the last six months:—

A drop of saturated aqueous solution of cresyl blue, about one-sixteenth of an inch in diameter, is put on the ear with the broad end of a needle. The skin is punctured through the drop, and when the mixture is about one-eighth of an inch in diameter films are made on cover-slips in the ordinary way. These are allowed to dry in air for three to four minutes, and are then stained with Leishman.

The advantages of this method are (1) its simplicity; (2) reticulocytes are well stained; (3) blood cells are evenly distributed and are not distorted; (4) basic staining is accentuated, so that white cells are more easily differentiated; (5) blood platelets show well; (6) the relative permanency; films eight months old show no signs of fading."

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Editorial

THE PROBLEM OF MATERNAL MORTALITY

WE commend to the earnest attention of our readers, particularly those engaged in general practice, two important articles which are to be found in the current issue of our *Journal*. The first by Prof. J. R. Goodall, of McGill University is on Maternal Mortality, and the second, by Prof. Ross Mitchell, of the University of Manitoba, deals with the Late Toxæmias of Pregnancy, various conditions which have a direct bearing on the maternal death-rate. The *Journal* has referred to this topic on several occasions before, both editorially and otherwise. A noteworthy article, by Dr. A. D. Blackader, appeared in our June issue. We make no apology, however, for returning to the matter again, as it is engrossing a great deal of attention at the present time, and will probably continue to do so. There is, indeed, hardly any subject that is more worthy of our attention than the consideration of how best to lessen the toll of death in cases of childbirth.

Let us ponder over a few figures. The death rate among maternity patients in Canada was 5.6 per 1,000 (in the year 1928); in the United States it was 6.5. In Europe the proportion is less. In Great Britain, for example, it ranges between 4 and 6 in different localities. The best figures come from the Continent, where Holland, Denmark, Norway, Sweden, and Italy give their maternal death rate as between 2.3 and 2.8. Of course, it is not fair to draw comparisons from figures without qualification. Such statistics are not altogether comparable, for much depends on variable circumstances; figures may differ widely in a given country from time to time, and may differ widely at the same time in different parts of the same country. Nevertheless, all will agree that the maternal mortality rate, for Canada at least, is too high and can be improved.

Professor Goodall's article, which was written at our request, is constructive in character and provides much food for thought. He puts aside certain extraneous circumstances, such as bad housing, poverty, illegitimacy, and the use of forceps, as not contributing materially to the death rate, but lays stress upon *infection*. Much as we may dislike to acknowledge it, it would appear that doctors and nurses are not without blame in this matter. They are frequently in contact with infectious material, and may, unthinkingly perhaps, carelessly sometimes, act as "carriers." Only on such an assumption does it seem possible to explain the remarkable difference in maternal mortality that is seen in two classes of obstetric patients—those attended by midwives and those confined in institutions—the mortality rate being as one to five in the two groups respectively. A very considerable proportion of maternal deaths is caused by the streptococcus, and Professor Goodall rightly stresses the need of attention to the nose and throat on the part of doctors and nurses, and the use of gloves and face masks. Here, no doubt, there will be found errors of commission and omission. Dr. Goodall goes farther and would separate the practice of obstetrics from that of surgery and gynæcology, and offers some very pertinent suggestions in regard to the practical training of medical students in midwifery. His is a counsel of perfection, perhaps, and some of his recommendations are more applicable to obstetric practice in cities and towns, but his remarks anent the distribution of infectious agents should give us all some heart-searching.

Professor Mitchell, also, has contributed a helpful article. The toxæmias bulk largely among the causes of death in childbirth. Both authors, we note, lay much stress upon preventive measures, that is to say, pre-natal care. While toxæmias of pregnancy may be mild, nevertheless they should not be neglected for that reason. Professor Mitchell points out that they are often recurrent and always serious; how serious is not always realized by the profession. Not only is pre-natal care a requisite, but after delivery mothers who have

suffered from toxæmia are under a serious handicap and should have trained care, not for days or weeks, but for months.

Not only must physicians and nurses be better trained, but they should be thoroughly alive to their responsibilities. Women also, need instruction, and this should be provided by the profession. Prospective mothers should be trained to ask for pre-natal care. The various problems, as they apply to large communities at least, are not insoluble, but the difficulties are greater when we come to deal with the wide areas and sparse population of our Canadian West. Here, certainly, the problems are different from those of the East, and different also from those of Great Britain and other parts of Europe. We should gain greatly if we could publish the views of our western confrères.

A. G. N.

RECENT STUDIES IN CARBOHYDRATE METABOLISM

THERE is, perhaps, no subject that is receiving more attention from the investigator at the present time than carbohydrate metabolism. This is, doubtless, due to the stimulus afforded by the long-looked for discovery and isolation of insulin. The amount of literature that is published annually on the subject is so extraordinary, not to say, appalling, that the ordinary medical man who attempts to cope with it can only confess his utter inadequacy. He is in the position of a man who has been caught in a maelstrom and is striving with feeble strokes to make his way to shore. For this reason we welcome the lectures delivered recently by Prof. J. J. R. Macleod,[1] formerly of Toronto and now of Aberdeen, at the London Hospital, on The Physiology of Glycogen, and the Role of Insulin and Epinephrine in Carbohydrate Metabolism. In these lectures are to be found a consideration and critical analysis of work done recently on this subject, so important and so baffling, by an acknowledged master, one whose own researches, with those of his colleagues and associates, stand in the very forefront. We can, at last, see what point we have reached.

The discovery of insulin, which has been of enormous scientific and clinical value, has, unfortunately, not as yet led to the solution of all the problems involved. In the words of *The Lancet*, "Insulin has not proved to be a master key, but it has opened many doors and it has closed others by showing how slender is the evidence upon which certain orthodox ideas about carbohydrate metabolism are based"[2] That insulin is a key in any sense is encouraging, and it is not an unfounded hope that it may yet prove to be a master key. It is clear gain, at least, that certain false conceptions have been done away with, so that a fresh start may be made.

When sugar is ingested its absorption from the alimentary tracts starts immediately. Furthermore, the accumulated evidence serves to show that the absorption takes place from the upper portion of the small intestine, and that the intestinal mucosa is endowed with a very highly specialized selective action, which is absent in the case of certain other absorbing membranes. When absorption has taken place and the sugar content of the blood is estimated very constant results are obtained. The alterations in the blood curve resulting from the administration of increased amounts of sugar, and those found in certain pathological conditions, are of considerable practical import, and their value is well known to every clinician. Numerous factors, however, enter in to influence the curve, such as the rate of absorption of the sugar from the intestine (which itself is governed by many factors), and the rate at which the tissues utilize the sugar that is absorbed.

The relationship of glycogen to the liver has also been under review. And in this connection it is well to note that the amount of glycogen to be found in the liver at any given time represents only the balance between processes of production and utilization, and is, therefore, not necessarily a measure of the rate at which these processes are proceeding during life. According to present indications glycogen is an essential

1. *The Lancet* **2**: 1, July 6, 1929; 55, July 13; 107, July 20, 1929.
2. *The Lancet*, Editorial, p. 179, July 27, 1929.

intermediary in hepatic metabolism. The rather widely accepted view that glycogen is merely stored in the liver is not considered to be adequate by Professor Macleod. Pollak[3] and, later, Markowitz,[4] as a result of injecting epinephrine into animals, in whom the liver glycogen had been reduced to a minimum by fasting and strychnine, found that after each injection hyperglycæmia was induced, and after many injections considerable amounts of glycogen appeared in the liver. On the other hand, in the case of animals whose livers contain large stores of glycogen, the exhibition of epinephrine brings about a lessening of the store, as Olmstead and Coulthard have shown.[5] We are, thus, confronted with the remarkable fact that the hormone epinephrine has a reversible action. It can cause glycogen to be deposited in the liver when none was there, and to be broken down when an abundance is already present. The same thing can be said about insulin, the other hormone that most definitely has an influence on carbohydrate metabolism. When insulin is given, without food, to fasting white rats it at first reduces the glycogen content of the liver, and, later, increases it, provided that a convulsive dose has not been given. Other observations of a somewhat different nature corroborate this conclusion. We are, thus, brought back to the original view of Claude Bernard that the glycogen of the liver is an internal secretion. He held, also, as is well known, that glycogen could be produced out of protein, while not denying that it could be formed also from absorbed carbohydrate.

With regard to the glycogen of the muscles it seems to be mainly dependent on the sugar of the blood, which may be derived either from the breaking down of the hepatic glycogen or more directly from absorbed glucose. It is possible, however, that some of it is manufactured in the muscles themselves out of protein and fat. As experimental results are conflicting, caution must be exercised in drawing conclusions. This much at least may be said, that while glycogen formation can occur in the muscles in the presence of insulin, yet insulin is not essential for the process, for glycogen is formed in the muscles of depancreatized animals. Professor Macleod, on the basis of much experimental work, suggests that there is, in the muscles, some unknown precursor from which both glycogen and lactic acid are derived. This either breaks down first into glycogen, the lactic acid being formed at an independent rate out of the general store of glycogen; or it gives rise directly to both glycogen and lactic acid.

Coming now to the question of diabetes and the action of insulin it must be said that the answer to the riddle cannot yet be given. The low respiratory quotient, the lack of power to store glycogen in the liver, and the excessive formation of glycogen from other sources than protein, have been commonly interpreted to mean the failure of the diabetic to oxidize carbohydrate. This theory does not appear to have been seriously weakened. Professor Macleod sums up the action of insulin, so far as this can be deduced in the light of incomplete evidence, much as follows. Both in normal and diabetic animals there is no known stage in carbohydrate metabolism up to that in which lactic acid is formed from muscle glycogen in which insulin does not play a part. It inhibits gluconeogenesis and stimulates the formation of glycogen in the liver of diabetic animals; it retards the formation of glycogen in the liver of normal animals, except as a late effect when the animal is fasting. It lessens the muscle glycogen when given to fasting animals, but produces no such effect when carbohydrate is being absorbed, except when an excessive dose is given. Under all conditions, both in normal and diabetic animals, it stimulates the oxidation of carbohydrates, a process which is, however, much more marked in the diabetic animal. The net result is to lower the percentage of sugar in the blood, notwithstanding the fact that some of its effects, such as inhibited formation of glycogen in the liver, would tend to raise it. Professor Macleod concludes that the effects just mentioned are secondary to some other fundamental change. We must assume that insulin acts on some process that is dependent on the structural integrity of the cells; it stimulates this process, producing, on the

3. *Arch. f. exper. Path. u. Pharm.* **61:** 149, 166, 1909.

4. *Am. J. Phys.* **74:** 22, 1925.

5. *Am. J. Phys.* **84:** 610, 1928.

one hand, a lowering of the glucose tension in the cell, so that sugar is removed from the blood, and, on the other, an accumulation of some intermediary substance, which, perhaps, in association with phosphate (since this is decreased in the blood as markedly as sugar is after insulin), is then oxidized or polymerized to form glycogen. Here the matter rests for the present, but there can be little doubt that before long the remaining links will be forged in the chain of evidence.

A. G. N.

ON MONGOLISM

AN interesting contribution to the elucidation of the problem of Mongolian idiocy is contributed to the pages of the *American Journal of the Medical Sciences** by Dr. Madge Thurlow Macklin, of the University of Western Ontario. Since it was first differentiated as a clinical entity by Langdon Down in 1866 the etiology of this disease has been a problem of interest, and many and various have been the theories advanced for its occurrence. One of the most widely accepted explanations is that which attributes the defective condition to reproductive exhaustion on the part of the mother, associated with immaturity or senile degeneration on the part of the ovum. Among other hypotheses which have been advanced as possibly effective in the development of Mongolism are the following: syphilitic infection more or less distant; severe emotional strain on the part of the mother during the early period of pregnancy; an unusual difference between the ages of the parents; and endocrine disturbance in the mother or in the fetus itself. The fact that so many diverse theories have been advanced must be regarded as evidence not only of the complexity of the problem but also of the fact that a complete solution has not as yet been arrived at.

Dr. Madge Thurlow Macklin has undertaken a very exhaustive study of all the statistics and facts found in literature that could throw light on the problem, and with these before her has examined the several theories one by one and has come to the conclusion that not one of them affords a satisfactory explanation for the occurrence of the condition. Figures are presented to show that these defective children are born of mothers at all ages; in the majority of cases not later than the fourth pregnancy; that a Wassermann reaction is seldom found either in parents or in the child; that during the World War hundreds of mothers were subjected to very severe emotional and physical strain, with no increase in the number of Mongolian imbeciles born; that the difference in age between the two parents in many cases is very slight, and that the mother may give birth not only to one Mongol but to two and three successively and may afterwards produce normal children. The suggestion that hyperthyroidism in the fetus may be the cause of Mongolism also fails; many cases have been reported of hyperthyroidism both in mother and fetus without any accompanying Mongolism, while on the contrary, on account of the close similarity between cretinism and Mongolian idiocy, many have attributed the latter to a deficiency of the thyroid. Nevertheless, the administration of the gland tissue has failed to bring about any improvement.

Dr. Macklin sums up briefly the results obtained from this research and states that the evidence is strongly against environmental influences, and much in favour of the defect being inherent in the germ cell and inherited.

Before entering upon a discussion of the mode of its inheritance Dr. Macklin calls attention to the fact that in a great many cases of Mongolian imbecility mention is made of the existence of the short little finger and of its incurved distal phalanx, and in some instances of the transverse line across the palm which divides it completely into two regions. These inherited defects, although they have no definite relation to Mongolism, point to the influence of heredity in such children.

If Mongolism is inherited the mode of its transmission demands careful investigation. Hermann* suggests that it is due to unit recessive factors. In considering this

* *Am. J. Med. Sc.* **178:** 315, Sept. 1929.

* *Arch. Ped.* **42:** 523, 1925.

possibility, we note that there are, so far as the writer is aware, only two records of a Mongolian idiot having given birth to children, but in both cases the children were normal, and in every instance of the birth of a Mongolian child the parents appeared normal, at least as far as idiocy of the Mongolian type was concerned. This fact, by Mendelian laws, at once rules out the possibility of the defect being a dominant factor.

Comparing Mongolism with amaurotic family idiocy, which occurs much less frequently than Mongolism, but also occurs in the offspring of normal parents, and hence may be regarded as due to a combination of two recessive factors, Dr. Macklin was able to collect records of 118 families in which this amaurotic idiocy occurred, and in which the order of the children was given. In addition to this there were 24 families reported in which the order of the children was not given. Of these 142 families there were 68 in which only one child in the family was defective, and 74 in which more than one were affected. These 142 families had a total of 279 defective children, or an average of 1.96, or nearly two amaurotic infants to the family. As compared with these Dr. Macklin found records of 2,491 families in which 2,526 Mongol children had been born. In 2,461 of these families only one child was affected; in 30 families there was more than one. Thus although in amaurotic idiocy nearly one family in every two had more than one child affected, in Mongolian idiocy only one family in 83 had more than one defective. Amaurotic family idiocy would thus appear to be due to factors which make the combination much more frequently than occurs in Mongolism, and, for reasons given above, may be considered as due to a combination of unit recessive factors. If Mongolism were due simply to one pair of unit recessive factors the probabilities of its affecting more than one child in a family would be similar to that of amaurotic idiocy. It may therefore be stated with some confidence that the inheritance of Mongolian idiocy is a much more complicated matter than dependence upon unit recessive factors or even upon two pairs of recessive factors would presuppose. Whether associated with several recessive factors, or whether there may be one or more dominant factors, must remain undetermined, as appropriate mating experiments cannot be made.

Dr. Macklin, however, has attempted by a study of the laws of chance, and by an original method of testing chances, to determine the percentage of defective offspring which would evolve out of various combinations of recessive factors, and has concluded after first testing three pairs of unit recessive factors, that five pairs afford possibilities in almost exact agreement with the conditions met with in Mongolism.

Such experiments and theoretical considerations, however, although not affording any definite proof of the mode of inheritance of Mongolism, do afford an explanation of how a condition dependent upon a number of factors can be so infrequent in most families that it appears only as isolated cases, while in other families it may affect as many as four out of ten children. In such an instance a parent would have almost the entire combination of factors present in his germ cells, but be saved from being a Mongol himself by the presence of one of the factors in the dominant condition.

In the summary at the end of the paper Dr. Macklin states that so far as the evidence collected will permit a conclusion to be drawn, none of the theories of environmental influences that have been advanced can be regarded as the cause of Mongolian idiocy. This she regards as due to inherited defects and therefore germinal in origin. The statement also that it is due to the presence of one pair of unit recessive factors cannot be supported. Its mode of inheritance would appear to be much more complex, and figures given show the similarity between theoretical results based upon the laws of chance and the actual statistics, if we regard the disease as due to the simultaneous presence in the germ cell of five pairs of recessive factors or two dominant and four pairs of recessive factors carried in as many chromosomes. Dr. Macklin does not suggest, however, that such agreement constitutes proof that this is the mode of inheritance of Mongolian idiocy.

A. D. B.

The word "factor" in this article is not synonymous with "gene", but signifies all those determiners which influence the appearance of this condition in the offspring, which can be found in one chromosome. Since in the author's opinion five chromosomes are involved, the disease is said to be dependent upon at least five factors.

A NEW TREATMENT FOR CHOREA

IN a recent issue of the *Lancet** Dr. Poynton and Dr. Schlesinger, both attending physicians of the Hospital for Sick Children in Great Ormond Street, London, describe a new treatment for chorea by the use of "Nirvanol," a new drug which recently has had a fairly extensive trial in Germany. In the clinics where this treatment has been used, it has met with such constant success that it continues to be employed in severe and obstinate cases. It appears strange that knowledge of this method of treatment has failed to reach the shores of England or America. The drug Nirvanol is formed from a combination of urea and glycol, and was at first used as a hypnotic for sleeplessness, and as a sedative in epilepsy. In chorea comparatively small doses are employed, and the successful results are not due to any hypnotic effect, but are dependent, apparently, on a specific reaction similar to serum disease, which takes place after a few days of its oral administration.

In the treatment of chorea the drug is administered by the mouth in daily doses of 5 grains (0.03 grm.) for a child of from 9 to 14 years of age. In a variable period, from 8 to 14 days after beginning the treatment, a well marked rash resembling that of measles appears accompanied as a rule by pyrexia. The drug should be stopped directly the rash is noticeable. It appears at first as tiny red macules seen on chest, abdomen and elbows, which, in the course of a day or two, enlarge and become slightly raised. From these situations it spreads to the limbs, and the extremities appear particularly affected; the macules are nearly always to be seen on the dorsum and soles of the feet and the palms of the hands. The face generally escapes. There is little irritation, but there may be slight headache and drowsiness, and conjunctivitis, pharyngitis, cervical adenitis and slight œdema of the eyelids and face are apt to occur. Continental writers state that at the outset of the rash the temperature may rise in some cases as high as 104° F. Poynton states that in his patients this high pyrexia did not occur although the rash was well marked. The earlier the rash appears the more severe are the symptoms and the longer the duration of the temperature, but as a rule the reaction is over and the rash disappears in from three to five days. With the onset of the fever the choreic manifestations are aggravated, but with the disappearance of the rash they improve with dramatic suddenness, and are generally completely arrested within a week or ten days. Heart lesions are apparently unaffected and certainly are not made worse. In one of Poynton's cases the chorea was complicated by early carditis with dilatation, but with the arrest of the chorea the heart resumed its normal size, although an apical systolic murmur persisted. The most constant sign of the reaction is in the blood, where a true eosinophilia occurs which reaches its maximum just before the appearance of the rash. During the administration of the drug there is generally a leucopenia with a decrease of the polymorphonuclear cells, and a relative lymphocytosis. With the subsidence of the general reaction the blood picture resumes the normal. Eosinophilia appears to be a definite feature of this Nirvanol disease and may occasionally be the only evidence of reaction. Prolonged oral administration of the drug to rabbits in some instances produced changes in the bone marrow, and an aleukæmia closely resembling that occurring with benzol or salvarsan.

For this treatment of chorea to be successful the reaction must be developed and a sufficiently large dose of the drug must be given to induce it, but at the present it is wise not to exceed a daily dose of 5 grains, and the drug should be stopped at once as soon as the typical reaction, in the form of rash, fever or blood change, takes place.

The usual reaction from Nirvanol appears to be absent in certain patients, and it is interesting to note that such patients also fail to react to the various sera. The exact manner in which the drug produces its remarkable effects on chorea is not known. It is certainly not due to the mere production of fever. The writers state that they do not

* *The Lancet* **2**: 267, Aug. 10, 1929.

consider the explanation to be that of protein shock.

Although the few cases treated in the great Ormond Street Hospital ran a mild and favourable course, experiments on animals would indicate that Nirvanol is not a harmless drug, and that its exhibition must be closely watched; the patient should be under careful medical supervision, and a watch should be kept on the leucocyte count to avoid any deleterious effect on the bone marrow. In rare cases alarming results have followed its administration. Keller describes a case in which the typical reaction had set in on the sixth day of the administration of the drug a striking arrest of the choreic movements followed, and the patient appeared to be cured. Eleven days later, however, a severe secondary reaction set in with high fever, headache, scarlatiniform rash, tonsillitis, nephritis, enlargement of the liver and spleen and blood-stained diarrhœa. A protracted recovery eventually ensued. This severe secondary reaction was thought to have been brought on by exposure to sunlight. A second case of this severe secondary reaction has been reported after giving artificial sunlight to a patient who had just finished his course of Nirvanol.

Good results have been reported by reliable men in various nervous clinics on the continent. Poynton reports six cases treated by this method, and so impressed was he by the prompt disappearance of the choreic movements in these cases that he considers Nirvanol of definite value in the treatment of persistent and severe chorea. There appears, however, at the present, to be some risk in this treatment; for this reason many may consider it unjustifiable to use such a potent drug to combat a self-curable disease. "We have," the writers say, "all seen the severest cases of chorea recover with only the most trifling symptomatic treatment, but we have also seen these cases develop permanent heart disease before they were finally cured of the choreic symptoms." It may be that the arrest of the chorea may prevent the rheumatic infection from reaching the heart. Should the ultimate prognosis of chorea after treatment by Nirvanol prove more favourable than it is with our present modes of treatment, then the drug indeed would seem to be a valuable discovery. The writers add that in two further cases under their care rheumatic nodules of long standing disappeared rapidly after a course of Nirvanol. Charts of the different blood examinations, and of the temperature and pulse, during treatment, are given and the details of each case treated appear in the paper from which we have abstracted the above statements.

A. D. B.

Editorial Comments

VITAL STATISTICS OF CANADA

The Preliminary Report, Vital Statistics of Canada, 1928, published by the Dominion Bureau of Statistics, Demography Branch, carries certain information which is of interest to the medical profession, inasmuch as it is some measure of the results of medical practice, and also because it is chiefly based upon reports made by medical practitioners, covering births and deaths.

The population of Canada for 1928 is estimated as 9,645,000. There occurred 236,194 living births, which number gives a birth rate of 24.5 per 1,000 population. This rate is one-tenth of 1 per cent below the rate of 1927. Three and one-tenth per cent of these births were illegitimate. There were 7,538 still-births, which is 3.1 per cent of the total births.

During the year there occurred 108,939 deaths, which gives a general mortality rate of 11.3 per 1,000 population. This rate is slightly higher than that for the year 1927, but is somewhat below that for 1926. The general mortality rate for the Province of Quebec is the highest of any province, being 13.8; the Province of Saskatchewan has the lowest rate, 7.2.

The table of deaths from certain specified causes shows that influenza was responsible for 4,697 deaths; diphtheria, 913; typhoid fever, 468; pulmonary tuberculosis caused 6,481 deaths, and of this number, 2,686 occurred in the Province of Quebec. Deaths from cancer totalled 8,511, the highest number, 3,442, having occurred in the Province of Ontario. Diseases of the heart were responsible for the highest number of deaths, 12,640. Diseases of the arteries caused 5,644 deaths; nephritis, 5,717. It will perhaps be surprising to many to know that appendicitis was responsible for 1,404 deaths; also that there were 748 suicides, 1,016 deaths due to accidental

drowning, and 1,081 to automobile accidents. Of the suicides, 284 occurred in the Province of Ontario.

Of the total of 108,939 deaths, 21,171 were those of infants under one year of age, and the total deaths under five years numbered 27,246. This means that practically one in five of all deaths are those of infants under one year of age, and that 25 per cent of all deaths were those of children under five years of age. This marks considerable progress as compared with conditions prevailing in that period not so far distant when 50 per cent of children died before their fifth year. At the same time, it is evidence of the need for further protection of the infant life of the country.

Of the infant deaths, 3,895 were caused by diarrhœa and enteritis, and of that number, 2,835 occurred in the Province of Quebec. Premature birth was the cause given in 4,576 cases, and injury at birth in 1,010 cases, both of which show rather plainly the need for ante-natal care and adequate delivery service.

If further proof were required of the need for care of the mother, it would be found in the fact that of the 1,325 maternal deaths which occurred, 438 were due to puerperal septicæmia, 329 to puerperal albuminuria and convulsions, and 172 to puerperal hæmorrhage.

Maternal mortality for the year 1928 was at the rate of 5.6 per 1,000 living births, which is identical with the rate for the year 1927. Manitoba at 5.1 and Nova Scotia at 5.2 have the lowest rates in the list of the provinces. Prince Edward Island's rate of 6.1 and Alberta's of 6.8 place them in the unenviable position of heading the list. There are slight variations from year to year in the various provinces, but during the past year there was no evidence of any decline in maternal mortality. This is in marked contrast with the infant mortality, for here we see the rate of 89.6 for 1928 can be favourably compared with the rate of 94.0 in 1927 and 101.8 in 1926, and we note that, allowing for yearly fluctuations, there is a definite downward tendency in the infant mortality rate of all the provinces. While the rate of 123.6 for 1928 for the Province of Quebec is a challenge to the health work of that province, it shows a decided gain over the rate of 142 for the year 1926.

A perusal of the report focusses attention upon the number of deaths which occur from diseases which should be rare. We are apt to think that sanitary measures have been thoroughly applied in this country. That such is not the case is evidenced by the 468 deaths caused by typhoid fever, which would not have occurred if the proper control had been exercised. Diphtheria, which was responsible for 913 deaths, is one of the few diseases for which means of prevention and cure are available. Tuberculosis is no longer the chief cause of death, but that there remains much to be done cannot be doubted when it is found to have caused 7,848 deaths in one year.

It would also appear that, considering the tremendous toll of lives taken by diseases of the heart, arteries and kidneys, the problem of the prevention or, at least, of the early detection and treatment of these diseases is an outstanding challenge to medical science. GRANT FLEMING

DR. CHARLES E. DE M. SAJOUS

Dr. Charles E. de M. Sajous, a pioneer and noteworthy investigator in the field of endocrinology, died on April 27th, at the age of seventy-six years.

Dr. Sajous was of French birth, the son of Count Charles Ronstan de Medicis-Jogoigne, the head of a Franco-Flemish family of that name in Florence, Italy. He began the study of medicine at the University of California, and received his degree in Medicine from Jefferson Medical College in 1878.

During his long life Dr. Sajous held not a few academic positions. He was appointed Professor of Anatomy and Physiology at the Wagner Free Institute in 1881; Clinical Lecturer on Laryngology at Jefferson Medical College in 1883; Professor of Laryngology at the Medico-Chirurgical College, and Dean of the Faculty, in 1897. From 1910 to 1922 he was Professor of Therapeutics at Temple University, and was made Professor of Applied Endocrinology at the University of Pennsylvania in 1921.

Dr. Sajous was an active member of many of the American Societies, frequently serving as president. He was American Gold Medallist in 1922. Nor did he fail to receive recognition abroad. He was an Officier d'Académie of France; a Commander of the Order of the Liberator of Venezuela; a Commander of St. John of Jerusalem of Spain; a Knight and Officer of the Legion of Honour of France; a member of the Humane Society of Belgium.

Dr. Sajous was a man of nimble mind, ever on the alert for new ideas, ever discovering new applications for old ideas, and had to a marked degree the inventive faculty. He devised several instruments for use in laryngology.

He will be best remembered in time to come for his great interest in the subject of the internal secretions, which he made peculiarly his own. He became editor in 1888 of the *Annual of the Universal Medical Sciences*, which, in 1896, became the well known *Sajous' Annual and Analytical Cyclopædia of Practical Medicine*, a monumental work which gained him world-wide recognition, and by which his life achievement will mainly be judged. In 1903 he brought out the first important treatise on *The Internal Secretions and the Principles of Medicine* which

although issued in two volumes has run through eight editions. Dr. Sajous was a brilliant man, and his death is a great loss to medicine.

A.G.N.

THE BRITISH MEDICAL ASSOCIATION

As our readers are, doubtless, all aware, close and friendly relations exist between our Canadian Association and its older sister in Great Britain. Our affiliation with the British Medical Association is indeed a matter of great gratification to us. We are pleased to be able to say, also, that our two *Journals* are beginning to draw closer together. Last month, by the courtesy of the Editor of the *British Medical Journal* we were enabled to publish in our columns, from an advance copy, the Address of the President of the British Medical Association at the last meeting in Manchester. Now we are able to announce that in our November issue will appear an important address by Mr. Sampson Handley on the genesis of cancer, sent to us by the expressed desire of the author himself. We may say now that we shall be glad to receive other papers from Great Britain and, indeed, from any part of the Empire. We are, further, privileged to announce that arrangements have been made whereby material appearing in the *Canadian Medical Association Journal* will receive increased consideration in the pages of our contemporary. This is but as it should be.

The British Medical Association was founded by Sir Charles Hastings in 1832, and is, consequently, in its ninety-seventh year. At its first meeting there were fifty members. By 1854 the membership was 2,000; in 1912 it was 26,568; in 1929 it is more than 34,000, representing a net increase of 14,000 since the war. The *British Medical Journal*, the Association's official organ, was first published in 1857. Its issue has now reached the magnificent figure of more than 39,000 copies weekly. This is a splendid showing and we offer our congratulations. We would express the hope that our own Association and its *Journal* will do as well in proportion.

The combined meeting of the British and Canadian Medical Associations, to be held next year in Winnipeg, is arousing keen interest here, and should serve to draw the bonds still closer. Canadians generally hope that their confrères from Great Britain and other parts of the Empire will forgather here in force in 1930.

A.G.N.

TUBERCULOSIS IN MANITOBA

Something of the steady and growing work which is carried on by the staff of the Manitoba Sanatorium may be gathered from the following notice of its program in the July number of the *Manitoba Medical Association Bulletin*:

"For the fourth consecutive year the staff of the Manitoba Sanatorium is planning clinics here and there throughout the province. This year we will try to visit almost every section. We will have our own portable x-ray machine and use plates freely. As in former years, the Provincial Public Health Nursing Service will co-operate.

We wish to see those who have been in contact with tuberculosis, or are suspected of it, or are definitely tuberculous, or any others our experience can help. In short, we wish to do as much as we can for as many as we can reach.

We wish these examinations to be arranged in every case through doctors in attendance, and whenever possible to be made with the doctor present. Reports are sent to doctors, not to patients. In some communities, where patients have seen several doctors, reports are sent to all doctors.

No charge will be made, since we do not want any suspected person to have any reason for staying away. . . . ."

The list of places to be visited is to be in addition to three clinics already held early in July, at Somerset and Virden, at which more than 400 patients were examined.

H.E.M.

A EUROPEAN TOUR OF CANADIAN DOCTORS

Even if one had not observed the name of the author on the title page there would have been little hesitation in ascribing to Dr. D. A. Stewart, of Ninette, the interesting "Travel Notes"* describing the recent European tour of Canadian physicians specially interested in the fight against tuberculosis. The notes are written with all Dr. Stewart's pleasant vivacity and unfailing freshness, and form not only interesting reading, but will also be found to contain many thoughts and facts of much practical value.

The various centres of anti-tuberculosis work in England, France, Switzerland and Italy were visited, and the principal features of each are well described. Anti-tuberculosis efforts in England and France are shown to be in great measure regarded as a part of public health work, but considerable room is left for voluntary effort. Much was learned from the various methods and measures employed in the several sanatoria visited all so willingly shown and explained to the travellers in every medical centre. The lectures delivered by Dr. Menzies of the London County Council, Sir George Newman, and Dr. Coutts, are well reported,

*"Travel Notes" by David Alexander Stewart, B.A., M.D., LL.D., Medical Superintendent Manitoba Sanatorium, Ninette. With Foreword by T. B. Macaulay, F.I.A., F.A.S., F.S.S. European Tour of Canadian Doctors, Associated with Tuberculosis Sanatoria and Clinics, September to October, 1928. Organized by the Canadian Tuberculosis Association. Assisted financially by the Sun Life Assurance Company of Canada.

and are worth careful study. Papworth Village settlement still remains a unique example of a well ordered self-sustaining village where earnest workers, disabled by tuberculosis, may keep hands and minds occupied, and feel that, with care on their part, life's problems for themselves and their families are permanently settled. Dr. Stewart, in his closing remarks, writes that the several members in the trip had daily and hourly stimuli to their thoughts on the treatment of tuberculosis, and on measures concerning the broader matters of general health. The tour undoubtedly proved to all the members both pleasurable and instructive, and these travel notes will emphasize many afcts learned during it which might otherwise be forgotten.

The publication of this booklet is due to the broad-minded and, we believe, wise generosity of the Sun Life Assurance Company of Canada, who also bore the larger portion of the expense of the tour. "Travel Notes" is fittingly accompanied by a foreword from the president, Mr. T. B. Macaulay. A.D.B.

MEDICAL REPORT OF THE UNITED FRUIT COMPANY*

The seventeenth annual report of the medical department of the United Fruit Company, of Boston, has been received, and contains the reports of the several medical officers of the company, together with a summary of the work done at the various districts in the tropics in which their numerous farms and office buildings are situated. The volume opens with comments on the more important diseases which occurred during the past year in the several tropical districts. Then follow a series of papers on malaria, containing an account of much experimental work and many observations on treatment, with special reference to measures for the control of this disease. In a paper Dr. Brosius of Panama states that although authors generally consider that treatment with plasmochin is not safe, except under immediate medical supervision, this drug when combined with quinine and employed in limited dosage is not only safe but has proved extremely valuable in the aestivo-autumnal form of the disease, and appears to be particularly destructive to the crescentic form of the parasite. It is well of course to direct that the tablets containing the combination of the two drugs (plasmochin 0.01 gm. quinine bisulphate 0.125 gm.) should be used with care, but the risk of by-effects when these tablets are employed in a district suffering severely from malaria is more than outbalanced by their effectiveness. Among the papers appearing in the third section of the report are a series of excellent case reports on many of the special forms of disease met with in the tropics. A section is also given to studies on various blood conditions, abstracts of reports on cases of snake bites, and reports on several interesting post-mortems. The volume contains more than fifty papers, all of them of a most interesting and instructive character. The United Fruit Company is to be congratulated upon the good work carried on by its medical department and upon the series of annual reports which it publishes, all of them containing valuable medical papers on the diseases met with in tropical districts. A.D.B.

* Seventeenth Annual Medical Report of the United Fruit Co., Boston, 1928.

THE CANADIAN JOURNAL OF RESEARCH

We note with pleasure the birth of the *Canadian Journal of Research*. This journal is issued by the Research Council of Canada as a medium for publishing the increasing number of scientific papers produced by Canadian workers. The Journal was planned originally for publication of work done under the auspices of the National Research Council, but it is also open for suitable papers from Canadian workers not connected with the Council. In this way it is hoped that it will serve to reflect the progress of scientific and industrial research throughout Canada.

It is especially notable in the first two issues how much research work, both in matters relating to husbandry and in biological problems, is being carried out in the western universities at Edmonton and Saskatoon. H.E.M.

We greatly regret to learn, just as we go to press, of the death of Dr. S. R. Jenkins, of Charlottetown, P.E.I., from pneumonia. Dr. Jenkins was elected to the high office of President of the Canadian Medical Association at the meeting in Charlottetown in 1928. He was at the Montreal meeting last June, apparently in good health and spirits, and his demise so soon after comes as a great shock to his hosts of friends. A fuller notice of Dr. Jenkins will appear in our next issue.

A BOOKLOVER'S PLAINT

If thou art borrowed by a friend,
Right welcome will he be
To read, to study, not to lend,
But to return to me;
Not that imparted knowledge doth
Diminish Learning's store,
But books, I find, if often lent
Return to me no more.

Special Articles

THE CAPILLARIES AND THE MORE IMPORTANT FACTORS WHICH CONTROL THEIR ACTIVITIES

A REVIEW*

BY A. D. BLACKADER, M.D., LL.D.,

Montreal

Dr. Dale at the outset of his Oliver-Sharpey lectures[1] on the activities of the capillary blood vessels, delivered in 1923, emphasized the importance of recent advances in our knowledge regarding the function of the capillaries as an active factor in the circulation; and went on to say that but a few years previously any discussion regarding the activities of the capillaries, and of the part taken by them in the general circulation, was limited to the question whether their primary function of facilitating chemical interchange between the blood and tissues involved an active secretion, or could be wholly explained by the physical processes of filtration and osmosis. Records, indeed, were not wanting of appearances seen under the microscope difficult to interpret except by attributing to the capillary walls an independent power of contracting and relaxing. The prevailing tendency, however, until quite recently was to provide some simple explanation for these appearances, or when active contractility in the capillary walls was admitted as a possibility, to regard it as a remnant of an embryonic condition which in the higher vertebrates played no real part in the regulation of the blood stream.

Lister[2] in 1858 in his classical paper on "Inflammation" described appearances in these vessels which to-day would be attributed to active changes in their size and tone, but which tradition was strong enough to lead him to regard as secondary to changes of pressure produced by alterations in the tone of the arterioles. Rouget[3] in 1873 described special contractile cells encircling the vessels with delicate protoplasmic processes; and Roy and Graham Brown[4] produced convincing evidence of the independent tone and contractility of these vessels, but little attention was paid to their statements. More than twenty years later, Mayer,[5] in 1879, repeated and in 1903 confirmed these observations, and Steinach and Kahn[6] in the same year demonstrated contraction in response to stimulation, and added the important fact that capillaries have a motor nerve supply from the sympathetic system. Nevertheless, for the next fourteen years, these observations had little influence on physiological teaching, and the rôle of the capillaries in the circulation was still regarded as one of passive obedience to external forces.

Thought became more active during the war, and in 1917 a paper by Cotton, Slade and Lewis[7] once more drew attention to the reaction of the capillaries in the human skin as manifested in dermatographia, and demonstrated that both the red and the white tache must be attributed to an intrinsic contraction of the capillary wall. Hooker,[8] in a paper published in 1920, confirmed the accumulating work of other observers regarding the presence of a motor supply to the capillaries in the sympathetic nerves, and added the significant observation that stimulation of the true sensory nervous fibres arising in dorsal root ganglia not only causes dilatation of arterioles but also an independent relaxation of the capillary walls. Shortly afterwards, Krogh,[9] impressed by the increased demand for oxygen by working muscles, as compared with the needs of resting muscles, showed, by means of an injection of India ink into the vessels, the greatly augmented amount of blood which passed through capillaries dilated in response to the requirements of active muscular fibres.

Investigation of the nerve supply to the capillaries at this date, 1920-1922, was being actively carried on in many laboratories. That stimulation of the sensory groups in the cord produced a dilator effect on the capillaries was confirmed by several workers. Vimtrup,[10] working at the suggestion of Krogh, reinvestigated the minute histology of the capillary motor mechanism, and fully confirmed and extended the descriptions given by Rouget and Mayer of the flat branching contractile cells on the outside of the endothelial wall of the capillaries, girdling it with fine processes; and described the connection of this contractile coat on the capillaries with the plain muscle coat of the arterioles on the one hand, and of the venules on the other, and the intermediate forms found at the transition ends in both directions.

Such evidence compels us to regard the capillaries as possessing an efficient independent contractile coat with motor and inhibitor nerve fibres, and having an important function in producing the fine adjustments of the local circulation demanded by local needs. The relatively coarse adjustment effected by the varying tone of the arteries secures for the individual the vascular tone demanded for an efficient general circulation, while the capillaries effect the fine

* Chiefly abstracted from the Oliver-Sharpey lectures of 1923 and the Croonian lectures of 1929 delivered by Prof. H. H. Dale, M.D., F.R.C.P., F.R.S., Director of National Institute for Medical Research, before the Royal College of Physicians in London.

minor adjustments necessitated by local requirements in the several systems, and by local irritation and injury. In the Oliver-Sharpey lectures of 1923, Dale drew attention to the changes in the capillaries produced by the action of certain poisonous protein derivatives, as they were then deemed, and the influence of these changes on problems in physiology and pathology.

The subject of the capillary circulation has again been chosen by Professor Dale[11] for the topic to be discussed in his Croonian lectures of this year, but on this occasion with greatly advanced knowledge. In them he deals with the action of certain chemical factors, now known to be developed in the body, and which have a very definite action in effecting with certainty, and in graded intensity, changes in the tone of the blood vessels.

So recently as in the year 1926 attention was drawn by Sir Thomas Lewis[12] to the evidence of the liberation from injured or irritated cells of a chemical substance closely resembling histamine in its action, and apparently responsible for the vasodilatation and wheal formation in the immediate neighbourhood of the lesion. Since then, evidence from many sources has been accumulated regarding other chemical factors existing in the body which have a definite action on the circulation, for the most part reinforcing and supplementing the recognized mechanisms of nervous control.

Attention was first called by Professor Dale to the part played in the control of the circulation by substances which have claims to be regarded as hormones in the true sense, using the word hormone as first applied by Bayliss and Starling to active principles formed in one organ and carried by the blood to effect their pharmacodynamic work in another. These substances are; (a) *adrenalin*, considered by Dale as a perfect type of such a hormone, and (b) the pituitary vasoconstrictor principle, *vasopressin*, which in the light of its recent isolation from other principles in the gland may be regarded as having also a presumptive claim to be included as such. Each of these is formed locally in an organ having the specific function of its production, and is distributed by the blood to all parts of the body, affecting all blood vessels which are specifically sensitive to its stimulus. The fact that both these general circulatory hormones are predominantly vasoconstrictor in their action is worthy of note. Apart from this action, the two differ widely in what we know of their chemical nature, of their modes of action, and of the conditions under which they are secreted.

Adrenalin.—Our knowledge of adrenalin and of the details of its action is more complete than is that of any other hormone. A relatively simple basic derivative of catechol, it was successfully produced by synthesis many years ago. It is readily destroyed by oxidation, and quickly disappears from the blood. Its action is therefore an evanescent one, unless it is injected in large quantities. It reinforces the accelerator and augmentor effects on the heart beat, and increases or inhibits the functions of different contractile or secreting cells in response to sympathetic impulses. As the output of adrenalin is under the nervous control of the splanchnic nerve fibres in the suprarenal medulla, in response to any sudden emotion an increased amount of it is thrown into the circulation in adaptation to the physiological needs of the system at the time.

Although adrenalin would appear to be carried in almost equal concentration to all parts of the body, its action on the blood vessels in response to sympathetic impulses may vary in intensity and even in direction, and thus induce variations in the vascular tone in different systems. The vessels of the gastro-intestinal canal are apparently in all animals more sensitive to the vasoconstrictor effect than are those of the skeletal muscles, so that a small dose of adrenalin entering the general circulation tends to produce a redistribution of the blood supply in favour of the skeletal muscles, and at the expense of the vessels of the alimentary canal. In some cases even a vasodilator effect appears to be induced by minute intravenous doses. Dale and Richards[13] were able to detect evidence of such a vasodilator effect in the cat and in the dog, favoured possibly by the concomitant action of a small amount of histamine absorbed from the intestinal tract. By this means a physiological condition favourable to digestion was replaced at the call of sudden anger or fright by a promptly increased blood supply to the skeletal muscles; a condition suitable for muscular activity.

Another condition in which the action of adrenalin effects a redistribution of the blood supply in accordance with the functional need of the animal was brought out in recent experiments. It concerns the control of the blood flow through the liver of the dog. The branches of the efferent hepatic veins in this animal are furnished with stout coats of plain muscle, very sensitive to the action of histamine, which stimulates their contraction, thus to some extent damming back the blood in the capillary spaces of the liver. During the process of digestion, the histamine absorbed from the bowel maintains this contraction and checks the venous outflow, inducing an accumulation of blood in the liver, and in the viscera drained by the portal vein. Under the stimulus of sympathetic impulses assisted by an increase in the secretion of adrenalin this constriction is lessened. Dale calls attention to the physiological significance of such a mechanism. At a sudden call for vigorous muscular action an increase in the supply of adrenalin opens widely the hepatic sluice, and releases for the needs of the whole organism blood which during digestion had been filling the capacious capillary bed of the liver.

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Finally, another of the notable exceptions to the predominantly vasoconstrictor action of adrenalin is provided by its dilator effect in correspondence with the dilator action of the sympathetic nerves of the arteries supplying the heart.

Vasopressin.—The pituitary vasomotor principle presents a contrast to adrenalin in many respects. Though its existence was recognized in 1895 by Oliver and Schäfer[14] our knowledge of its chemistry is still very meagre. Only recently has the complete separation of the two active principles in the secretion of the gland been effected. Vasopressin, with an active constrictor effect on the capillaries and with but slight action on the uterus, has been separated from oxytocin, which has a powerfully stimulating action on the uterine muscle and but little on the vessels. It is possible that there may yet be separated a third therapeutically important principle with a definite antidiuretic action, but this has not yet been effected. Our immediate concern is with vasopressin, and its function in regard to the circulation. Of its chemistry we know little. It is moderately stable when boiled in acid solution but easily destroyed by alkali. Its action in the system persists long, and even after its apparent subsidence the vessels remain for some time relatively insensitive to further injections. It is difficult to believe that a substance so potently active on artificial injection, should be concentrated in a structure with no recognizable method for its supply through the blood to the tissues and no evidence of any nervous influence by which the amount supplied can be made to vary at the call of any emergency. Cushing and Goetsch[15] long ago put forward evidence in favour of its passage from the lobe into the cerebrospinal fluid. It has never been proved, however, that the active principle leaves the gland by this route. The gland and its posterior lobe are well supplied with blood vessels, and it is difficult to suppose that the blood passing through a tissue so highly charged with such diffusible principles should fail to carry away sufficient for the requirements of the system.

So far as our knowledge at present permits any statement to be made regarding its function all that can be said is that vasopressin appears to produce its effect on the circulation by increasing the tone of the arterioles without any reference to their nerve supply. Artificial injections of an extract of the pituitary lobe, or of its vasopressin principle, into the blood vessels of a human patient or into an anæsthetised or decerebrate mammal, produce definitely impressive results.

Dale,[16] however, states that he knows of no evidence to indicate a recognizable loss of capillary tone following removal of the pituitary posterior lobe in the mammal. The results of such an operation except on the diuretic function appear from the records to be remarkably small. The same thing holds true of the destruction of the medulla in both suprarenal glands, a destruction which is not only compatible with indefinite survival, but is also without any discernable effect on the general vascular tone of the animal.

Such absence of obvious change in the efficiency of the normal circulation when the supply of one or other of these hormones is cut off will appear less surprising if we consider them as auxiliary factors in the multiple provision of nature for the maintenance of an efficient vascular tone. We have in the first place the vasomotor centres acting through the sympathetic nerves. In emergency their action is reinforced by an accelerated output of adrenalin. The function of the pituitary hormone may be to provide yet another safeguard against circulatory collapse by a general undiscriminating maintenance of tone in the small blood vessels. Such a conception of its function would render intelligible the otherwise curious discrepancy between the trivial effects on the arterial pressure and general circulation which its injection produces in a normal individual, and the remarkable restorative action which it exhibits on vascular tone and the efficiency of the circulation, in the victim of primary surgical shock or vasomotor collapse.

Histamine.—Histamine first came into prominence as an intensely active base capable of producing lowered blood pressure, and symptoms resembling anaphylactic shock; to its action was attributed the toxæmic collapse which occurred in severely wounded soldiers in the early years of the war. The first claim to the chemical identification of histamine as the essential depressor constituent of animal tissues was made by Abel and Kubota[17] in 1919. They isolated histamine salts from tissues examined by them.

Sir Thomas Lewis[18] in his Croonian lectures of 1926 described an experimental study of the local vascular reactions seen in the human skin. From whatever provocative stimulus the reaction developed, it presented a characteristic threefold complex, a local red reaction due to dilatation of the minute vessels, a wheal succeeding this, and coincident with this dilatation a surrounding irregular flare due to dilatation of the larger arteries. The two former were independent of nerve supply, and due to the liberation from the injured cells of some chemical substance. The last appeared to be due to a local axon reflex. Sir Thomas Lewis had no exact knowledge at that date regarding the chemical agent, but found that among known substances histamine reproduced the complex exactly when introduced in minute doses into the epidermis. Histamine at that time was not regarded as a constituent of the normal tissue.

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An opportunity for a more complete investigation of the depressor constituents of tissue extracts was afforded Professor Dale by the fact that during the year 1926 claims were made both in Canada and the United States regarding the therapeutic value of an extract prepared from the liver as a specific in the treatment of high blood pressure. Professor Best of Toronto, who was at the time due to spend some months in the Research Laboratories, brought samples of this liver extract with him, and indicated the method by which the different batches of this extract could be physiologically controlled. A large supply of liver extract was in this way made available for investigation. On examining it, the presence of two different active principles were easily recognized. One had an action resembling that of choline, affecting chiefly the stronger arterioles, the other an action resembling histamine, with an action on the minute vessels and capillaries. An artificial mixture of choline and histamine was easily prepared, the action of which was indistinguishable from that of the liver extract. Eventually from these alcoholic extracts of perfectly fresh liver both choline and histamine were obtained in a pure form and in sufficient quantities to ensure complete chemical identification, thus rendering it unnecessary to suppose that any other more complex and unidentified principles contributed to the depressor vasodilator action.

It was possible now with some confidence to assume that a histamine-like action in an extract of an organ was due to the presence of histamine itself, and a rapid survey for histamine was made in a number of organs. At the same time, an attempt was made to determine whether the histamine extracted from a tissue, such as that of the lung, was present during life or was formed rapidly after the death of the cell. A lung taken from a living anæsthetized animal was frozen immediately in strongly cooled alcohol before mincing, and was found to yield as much histamine as the other lung left for two hours in the dead body before removal. The conclusion was drawn therefore that histamine must either pre-exist during life or be formed in the very act of cellular death, and therefore histamine had a good claim to be regarded as a normal constituent of the living cell.

Lewis[18] and his colleagues were reaching similar conclusions independently. They had evidence that the living cells of the skin when subjected to irritation or injury liberated a substance remarkably like that of histamine. It had been shown in their laboratory that the cells of all organs under the most conservative methods of artificial extraction apparently contained histamine. Lewis, however, hesitated to acknowledge this as an absolutely proven fact, and preferred to refer to the substance liberated in his laboratory as the H substance.

The two important actions of histamine, namely, a direct dilatation of the minute vessels and a reflex dilatation of the larger arterioles as described by Lewis differ in the relative amounts of each experimentally induced in different mammalian types. The frog, however, is a definite exception, and by the absence of any vasodilator action from either histamine or Lewis's H substance manifests apparently complete insusceptibility to the action of this principle.

Viewed as a whole, the evidence would indicate that histamine is a generally distributed constituent of the cells in the normal body, inert while it remains in the cell, but intensely active in producing local dilator reactions when appropriate stimuli release it from the cell into the tissue fluid, either free or in molecular combinations of varying complexity.

To glance for a moment at other effects of histamine than those on the minute blood vessels, the special activity which first brought it into notice was its intense stimulation of the plain muscle of certain hollow viscera, particularly, those of the uterus and the bronchi. Released by stimulus or injury from plain muscle, it gives rise not only to vascular dilatation in the local capillaries but also to a definite contractile reaction in the muscle cells directly injured or in others in their immediate neighbourhood. The fact that lung tissue, which contains so high a proportion of endothelial cells, contains also by far the largest amount of histamine, suggests that endothelial cells must be rich in this base. The physiological significance of this amount of histamine in the lung must be regarded as a problem awaiting solution.

Considering all the evidence regarding the normal physiological functions of histamine, it may be stated that its action is practically limited to the immediate neighbourhood of its liberation. The very limitation of its distribution may by itself be regarded as implying for it a localized function as distinguished from the more generalized function of the hormones distributed by the blood stream. The liberation from an active cell of a substance like histamine, acting on the minute vessels in its immediate neighbourhood, should provide an excellent mechanism for the fine adjustment of the blood flow to the fluctuating needs of small tissue units.

Our early knowledge of the activity of histamine was associated with the development of symptoms resembling those of anaphylactic shock. The knowledge was then new that an artificial product of protein digestion such as the familiar Witte's peptone when injected into a vein reproduced the characteristic symptoms of anaphylactic shock. When the action of such a simple substance as histamine was found to produce many of the principal features of shock, it was natural that it should be identified with its cause. Histamine may be liberated from or

in the immediate neighbourhood of reacting cells; and on the other hand some anaphylactic injury of the cells of some large organ, such as the liver, may liberate histamine into the general circulation in such quantity as to produce its effects in the body generally. That these two types of reaction do occur, one in the guinea pig and the other in the dog, would appear to be indicated by experiments;[19] but it was found that such results from histamine in the immediate neighbourhood of its release, when distributed by the circulation, do not complete the picture of an anaphylactic reaction. The latter involves effects of a more injurious and lasting nature than any which direct injection of histamine can produce.

There is a large group of pathological reactions produced by natural infections, and by the artificial injection of various substances into the blood stream, which more or less closely resemble the symptoms seen in the anaphylactic or allergic reactions. When once it is realized, however, that any kind of cell injury which leads to the release of intracellular histamine must be followed by symptoms of histamine poisoning, the difficulty of disentangling the different parts of the total effect will be realized. The liberation of histamine will not by itself account for all the symptoms in anaphylactic shock. Moreover, we have no justification for assuming that histamine is the only cell constituent which injury liberates. More severe injury of any kind must be expected to introduce other elements into the reaction, and it may do this either by causing liberation of other and unknown cell constituents, or by directly affecting the physiological integrity of the endothelium of the reacting vessel. As the reaction becomes more frankly pathological the effects of histamine fail more and more to fill the picture.

Acetyl-Choline.—Attention must now be directed to the action of an entirely different vasodilator substance, which resembles histamine in certain features of its scientific history. Choline has long been known as a constituent of the normal body in which it enters into the constitution of the group known as lecithins. Like histamine it was made in a chemical laboratory before it acquired physiological interest. It has for some time been known to produce a depressor effect when injected into the mammalian circulation. On making a systematic investigation of its action, the remarkable parallelism between its effects and those produced by stimulation of the parasympathetic nerves was observed. When Reid Hunt[20] confirmed the predominantly vasodilator nature of acetyl-choline in almost incredibly minute doses he was struck with the resemblance between its effects on the vessels in the limbs, and those produced by stimulation of the appropriate sensory nerve routes. During more recent years the activity of this acetyl-choline has gained interest in several directions. Apart from its parasympathetic and vasodilator effects in minute doses readily annulled by atropine, acetyl-choline, injected in doses after the atropine, exhibits a powerful action on ganglion cells, similar to that which nicotine is known to produce.

There appears also to be definite evidence in favour of the view that the vagus produces its effects on the heart muscle, not by direct passage of the impulses to the effector cells, but by liberation in relation to them of a substance having an action similar to that hitherto associated with stimulation of the vagus, and having the properties of an unstable choline ester. The evidence needed to justify this assumption was the discovery in some normal organ of a substance having the physiological properties and chemical identification of such a substance. Opportunity was presented to Prof. Dale by a chance observation. In completing a series of investigations on the distribution of histamine in the spleen an additional substance was found which had a surprisingly powerful choline action. Investigation showed that chance had presented us in this tissue with an intensively active and unstable choline ester, which was present in the animal organ, but in too small an amount for isolation. Careful investigation indicated it to be unstable to alkali, but to have the power of lowering arterial pressure, stimulating isolated intestinal muscle, and producing an abnormally slow contraction of denervated voluntary muscle; actions exactly resembling those of acetyl-choline.

In the case of the inhibition of the heart by the vagus,[21] the liberation of acetyl-choline in relation to the heart muscle seems to fit the known facts, including the annulment of both vagus and acetyl-choline reactions by atropine; it appears also to be the only known substance that can do so. We are probably right therefore in regarding acetyl-choline as the agent concerned.

For the autonomic system in general, the view that the arrival of nerve impulses at the peripheral endings may act on the effector cells indirectly through liberation of a chemical agent is not of recent origin. Elliott,[22] as long ago as 1904, suggested that the true sympathetic nerves might so act by the liberation of adrenalin at their synaptic unions with plain muscle and gland cells. Such a conception is now supported not only by analogy with parasympathetic effects, but by the direct observation made by Loewi,[23] and confirmed by others, that the sympathetic accelerator effect on the isolated frog's heart involves the liberation of an accelerator substance. It would be rash to assume as yet that adrenalin is the substance in question. The case made for acetyl-choline, as the transmittor of parasympathetic and sensory collateral vasodilator effects is based partly on the chemical

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behaviour of the vagus substance, and partly on the reproduction by the nerves of another aspect of its action unconnected with parasympathetic effects. That other sympathomimetic substances may occur in the tissues is suggested by the effects of certain extracts recently described by Collip.[24] Whatever be the nature of this suggested chemical intervener between sympathetic impulses and effector cells, it can serve only as the transmittor of sensory originated impulses. We have as yet no evidence for the localized peripheral release of adrenalin, or of any substance acting like it.

Broadly, the contrast indicated in an earlier lecture appears to hold good. Vasoconstrictor effects, whether produced by nervous impulses or by hormones, are centrally originated and widely distributed, and are concerned with the upholding and mass variation of vascular tone. Vasodilator effects are largely, though not entirely, local reactions, chemically originated, and concerned with the finer adjustment of blood supply to local requirements.

REFERENCES

1. DALE, H. H., *Brit. M. J.* **1:** 959, June 9, 1923.
2. LISTER, LORD, *Inflammation*, Philadelphia Transactions **148:** 645, 1858.
3. ROUGET, *Comptes Rendus* **79:** 559, 1873.
4. ROY, C. S., AND BROWN, I. G., *J. Physiol.* **2:** 323, 1879.
5. MAYER, S., *Anat. Anzeiger* **21:** 442, 1902.
6. STEINACH, E., AND KAHN, R. H, *Pflüger's Archiv.* **97:** 105, 1903.
7. COTTON, T. F., SLADE, J. G., AND LEWIS, T., *Heart* **6:** 227, 1917.
8. HOOKER, D. R., *Am. J. Physiol.* **54:** 30, 1920.
9. KROGH, A., Anatomy and Physiology of the Capillaries, New Haven, 1922.
10. VIMTRUP, B., *Zeitschrft. f. d. ges. Anat.* **55:** 150, 1922.
11. DALE, H. H., Croonian Lectures, *Lancet* **1:** 1179, June 8, 1929.
12. LEWIS, SIR THOMAS, Blood Vessels of the Human Skin and their Responses, Shaw & Sons, London, 1927.
13. DALE, H. H., *Lancet* **1:** 1180, June 8, 1929.
14. OLIVER, G., AND SCHAFER, E. A., *J. Physiol.* **18:** 278, 1895.
15. CUSHING, H., AND GOETSCH, E., *Am. J. Physiol.* **27:** 60, 1910.
16. DALE, H. H., *loc cit.*
17. ABEL, J. J., AND KUBOTA, S., *J. Pharm. & Exp. Ther.* **13:** 243, 1919.
18. LEWIS, SIR THOMAS, Croonian Lectures, *Brit. M. J.* **2:** 61, July 10, 1926.
19. DALE, H. H., *Lancet* **1:** 1234, June 15, 1929.
20. HUNT, R., *Am. J. Physiol.* **45:** 197, 231, 1918.
21. DALE, H. H., *Lancet* **1:** 1289, June 22, 1929.
22. ELLIOTT, T. R., *J. Physiol.* **31:** 20, 1904.
23. LOEWI, O., *Pflüger's Archiv.* **189:** 239, 1921, and following volumes; especially **214:** 678, 1926.
24. COLLIP, J. B., *J. Physiol.* **66:** 416, 1928; *Trans. Royal Soc. Can.*, May 1929.

MATERNAL MORTALITY

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Mortality in motherhood has been a subject of much learned discussion and writing during the past year or two. Aberdeen in Scotland was one of the first cities to take up the subject as a community effort to lessen the death rate during the puerperium. A commission was appointed to approach the subject from every possible angle and to co-operate, in the most generous sense of the word, with the doctor and midwife. The commission did their work with such fine appreciation of the sensibilities of the midwives and obstetricians, that a degree of co-operation was obtained that was most praiseworthy. Anything even with the faintest flavour of the inquisitional was eliminated, and the medical and midwifery circles were at once impressed with the knowledge that here was a body of sincere men, men eager for the truth, and the truth was given willingly and not by extraction. This is stated at the outset because the results of the work of this commission have led to highly probable conclusions which may go far towards the formation of new national obstetrical policies.

The results of this commission have led to the formation of a similar national body established by the British Ministry of Health. This Royal Commission will be of similar scope to that of Aberdeen, but will extend not over one city only but over the whole of England and Wales. The results of this inquiry may come to us in parcels during the working stages of the commission, or the reports may be reserved until the work of the commission is completed. In the latter case it may be from five to ten years before the results are available. However, as the Aberdeen report forms the basis of most of the learned discussions upon maternal mortality, it will be well to quote from it somewhat briefly.

1. The analysis of the records of maternal deaths in Aberdeen over a period of ten years, as obtained by means of a special system of inquiry, has not revealed any definite relationship between environmental conditions and puerperal mortality. Thus, in turn, puerperal mortality in relation to cleanliness of house, size of house, crowdedness of house, and to congested areas, has been examined, and no significant association of any of these conditions with puerperal mortality has been ascertained.

2. Similarly, the influence on maternal mortality of more personal factors, such as age of the mother, illegitimacy, occupation of the mother, habits of the mother, health of the mother before and during pregnancy, stillbirths and syphilis, and sequence of pregnancies, has been examined, with results that confirm generally existing

views as to the influence of these various factors on maternal mortality.

3. The comparative maternal death rates from all causes and for the separate causes of death in the practices of doctor, midwife, district, and institution have been analyzed, the factor of selection being eliminated by transferring the case back to the original doctor or midwife in charge of the case, and it has been found that the death rate per 1,000 maternity cases is 2.8 in the practice of midwives, 6.9 in the practice of doctors, and 14.9 in in-patient institutional practice.

4. The evidence indicates that, in so far as midwifery are concerned, the application of the midwifery forceps has no prejudicial effect on the mother.

5. Statistical evidence has been obtained of the reduction in maternal mortality which accrues from the provision of ante-natal services.

6. There is reason to believe that the high incidence of puerperal sepsis in maternity institutions in Aberdeen is due to contagion.

7. The view is advanced that the higher incidence of puerperal sepsis in the practice of doctors as contrasted with that of midwives is also due to contagion, being dependent in considerable part on a streptococcal-carrier condition in doctors.

8. It has been shown conclusively that the streptococcus hæmolyticus plays by far the most important part in the causation of puerperal sepsis.

9. It has again been demonstrated that the same type of hæmolytic streptococcus can, on occasion, produce puerperal fever, scarlet fever, erysipelas, and pyogenic infections.

10. The evidence goes to show that an expansion and improvement of ante-natal services will result in an important reduction in maternal mortality.

11. The evidence supports the view that the development of a new midwifery organization in which midwives conduct all normal deliveries, and in which doctors provide the ante-natal services and deal with obstetrical complications, will result in a significant reduction in puerperal mortality.

12. It has been shown that if the risk of contagion in maternity hospitals is to be restricted, then the number of patients and their spacing in the wards must be rigourously controlled.

13. So far as the specific prophylaxis of puerperal fever is concerned, it has been shown that, while the exotoxins of the streptococci causing puerperal sepsis can be neutralized by any monovalent streptococcal antitoxin, the destruction of the organisms is only likely to be secured by the production of a type (serological) specific antibacterial serum.

To anyone who will carefully read over the above paragraphs it will become evident that there is food for much thought. It will come as a shock to many that institutional maternal mortality is five times higher than midwifes' maternal mortality, and that doctors' maternal mortality is, roughly, twice that of the midwives. This cannot be passed over lightly; it demands our most serious study. One is reminded of the Vienna obstetrical clinic in 1848. The then largest obstetrical clinic was divided into two sections. One was under the supervision of and worked by the midwives; the other was under the administration of Semmelweiss and his staff. The students received their instruction under Semmelweiss, but were not allowed to enter the clinic run by the midwives. The mortality from sepsis was always higher in the surgical half of the hospital, and in times of epidemic the death rate reached 30 to 35 per cent. This difference between the two administrations soon became common knowledge. Patients were not allotted to any part of the hospital until they came for admittance in the first stage of labour. It is written that when allotted to the doctors' section by the admitting officer they would frequently throw themselves on their knees and beg to be sent to the midwives' section. Semmelweiss, in trying to find the cause, realized for the first time that the students and staff attended autopsies and came direct from the autopsy room to the obstetrical clinic. This was the only outstanding difference between the technique of the midwives' section and the physicians' section and, therefore, was considered the probable cause. The remedy was applied with success. To-day, with a much reduced mortality, the proportionate mortality is the same as between midwife practice and physicians' obstetrical work. This does not redound to the credit of the physicians. Moreover, there are no students in this case, so we must seek the cause elsewhere.

Not all of the thirteen conclusions cited above are of equal value. Some are self-evident; others are of singular interest, and debatable. But, clearly, it behooves all of us to try to find the solution of the difficulties.

Clause 5 deals with the effect of ante-natal care upon mortality. Those who, for the past ten years, have followed the results of ante-natal care and instruction, cannot but be struck by one or two outstanding improvements. First of all, let it be stated that the main causes of maternal mortality are sepsis, toxæmia, and hæmorrhage. The most notable change as a result of ante-natal care is seen in the enormous reduction in the incidence of eclampsia. This result is attributable entirely to the dissemination of knowledge of its symptoms and dangers. Cases are now recognized early and preventive treatment is applied early, and the singular part is that preventive treatment not only prevents eclampsia but very frequently cures the toxæmia. As a consequence also of the ante-natal clinic, nephritic cases are recognized early and appropriate treatment is begun before the damage is irreparable. When one considers that so much has been done in the past few years in the matter of ante-natal care, one need not be a visionary to expect that eclampsia will become an exceedingly rare accident in the not far distant future.

Retroplacental hæmorrhages and apparent accidental bleedings are, in by far the most cases, a direct outcome of toxæmic states. Unfortunately, the improvement in incidence is not so marked here as in eclampsia, because so

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many of the hæmorrhagic cases are mildly toxic cases, with few symptoms. This mild toxic state is usually prolonged and cumulative, and frequently overlooked unless it is carefully looked for. But, here again, with further instruction of the laity, and a closer watch by physicians and hospital staffs, it is a fair assumption that these slowly cumulative toxæmias will be recognized early and appropriate treatment applied. When this happens the results will be even more striking than has been the case in eclampsia. Why? Because these cumulative toxæmias respond more readily to treatment.

As regards sepsis, the forecast is a different one. Sepsis, since the introduction of the glove in obstetrical practice, has fallen very considerably, but it is still altogether too high. It has not appreciably fallen in the last few years. Last year, in the United States, 18,000 women died of puerperal sepsis. Now, this does not begin to tell the true state of affairs. Only too frequently the cause of death is put down as pneumonia or other incident in the puerperal septic state, so as to avoid any possible question about errors in technique. If all those who had died of complications of puerperal sepsis were added to the above, and if to this figure were added all those who died of septic abortion, the number would, undoubtedly, be vastly higher.

The only remedy for the prevention of sepsis in abortion lies in instruction of the laity and physician. The laity must be taught the frightful risks that accompany abortions, whether they are induced or spontaneous. The exceedingly high death rate accompanying induced abortion must be brought to the attention of the public. Fear of consequences will be the strongest deterrent. Spontaneous abortion also has its great dangers. Physicians should be made aware of the dangers incident to vaginal examination without proper technique, and the futility of and the dangers resulting from meddlesome and ill-timed intervention.

Sepsis in the puerperal state must be examined fairly and squarely. The lower mortality rate in the midwives' practice as compared with that of physicians', and the still greater difference when compared with hospital practice, argues for a new introduction into the case room by the physicians or by the hospital staffs (nurses and doctors). What is this new factor? Let us look at it squarely. A patient in the hands of a midwife is in the hands of one woman only. Relatives do not count because the patient is more or less immune to her surroundings. Let us put down the chances of infection from the nurse as 1 per cent. The patient attended by a physician-accoucheur is also attended by one person only, (possibly with an attendant nurse); the incidence here is, also, we may say, 1 or 1½ per cent. Yet his infected cases more than double the midwife's cases. The cause must lie in the fact, not that the midwife is a better "waiter" during the first and second stages but that she is less likely to be a carrier of infection, in that she deals only with clean obstetrical cases and is not called upon to do minor septic surgery, or to attend contagious diseases and other practice dangerous to parturient women. If we now turn our attention to hospital practice, the chances of contamination are greatly increased by the larger number of nurses, the presence of a large surgical staff, and (in many cases) students. It has been demonstrated in most of the recent virulent outbreaks in hospitals that the cause was a "carrier" of the streptococcus, harbouring it in the throat or nose. Autogenous infections are frequent, but are seldom other than mildly morbid states and probably very seldom cause death.

Now what is the remedy? It is so simple on paper, but so difficult in practice. Only recently I went into the nursery of a large hospital. I was handed a gown and a mask. I put them on. The nurse who came in with me took no such precautions. When I called her attention to her sins of omission, she pulled a nose mask out of her pocket, after she had been stooping over the child. This is the personal element that has always to be reckoned with. It is safe to say that most nurses and doctors think that such technicalities are all right for others but unnecessary in their own cases. Yet it is just because the physicians and nurses are dangerous to obstetrical patients that we must adopt every means to protect the patients from these contacts. Some enlightened opinions, high up in the obstetrical world, hold that we ought to revert to the midwife as an easy means of remedy. This argument has to be met frankly and my answer applies only to Canada. Let other countries find their appropriate solution. We have committed ourselves for generations to the policy of physician-accoucheurs. We cannot turn back now even if we should wish to. Our policy has been an evolution, slow, and cumulative. The physician-accoucheur has come to stay. That is the positive answer. The negative side is that we have practically no midwives, nor have we a class of women who would be willing, in large numbers, to undertake this type of work. It would mean years of training to make them efficient. Lastly, our public (except those recent imports from the near East) are not favourably disposed to midwives, and the public have the say as to who may or may not attend them in labour. What an indictment of our training in obstetrics to admit that a midwife, with poor schooling and short medical training, is a more effective obstetrical agent than is a graduate in

medicine! No, the fault lies with our methods, and the earlier we recognize this and apply the remedy the sooner will obstetrics enjoy the immunity which it so highly deserves. Were men the parturients the writer ventures to state that we should have acted with greater celerity.

In short, it is our first duty to protect the patient against herself, and our second duty to protect her against others with whom she comes in contact during her puerperium. How can we perform the first? By establishing ante-natal observation depots, easy of access, and with frequent and convenient consulting hours; by staffing the observation depots with keen efficient men, and protecting the patients by every practicable means against contamination during these consultations; by providing a mother hospital to which patients can readily be sent for observation and treatment.

As to the second, I would advocate the complete separation of obstetrics from all other branches of medicine and surgery. In the medical wards the staff come so frequently into contact with contagious and infectious diseases that they easily become dangerous contaminators. The surgeons are even more dangerous, owing to the large number of septic cases under their care, and I would insist that gynæcology and obstetrics be separated as to buildings, resident staff, and nurses. Gynæcological surgery is in great part septic surgery. One has but to mention pelvic abscesses and incomplete abortions to bring this forcibly to mind. The latter type of case constitutes quite a large percentage of gynæcological surgery.

Community of resident medical and nursing staff in a gynæcological and obstetrical hospital will, I feel, in a very short time be a thing of the past. The nursing and medical staff should be examined carefully at intervals for septic throats, nasal infections, skin lesions, and such like infectious troubles. Cultural tests should be performed at regular intervals. (A difficulty arises here, in that bacteriologist cannot quickly tell when an organism is virulent or attenuated, but it would be erring on the safe side to eliminate even doubtful contacts.) It is the writer's opinion that the day of large wards, both for mothers and the infants, has gone, and that small subdivisions, and the smaller the better, are in order.

We must adopt every possible means of disseminating knowledge among the laity, as to personal hygiene, activity, diet, the early recognition of symptoms of significance, and sexual intercourse. The three last cases of virulent sepsis seen by the writer were attributable to intercourse just before the onset of labour. In two of these the membranes ruptured one and three hours, respectively, after intercourse.

We must recognize that obstetrics is a specialty, probably the most difficult specialty, requiring careful observation, vast experience, quick judgment, and more than ordinary skill. When we consider that after delivery the uterus is a large raw surface communicating with the external world, we are not surprised at its tremendous potentiality for disease, and one wrong step along a certain line of conduct does not often permit a retraction.

For us the remedy is not midwives, but better trained obstetricians. The day is gone when the budding practitioner can look upon obstetrics merely as a bread winner until he can dispense with this means of livelihood. And the means for greater education of the physician lies in two directions. Firstly, facilities for post-graduate study or observation must be provided. Lectures by prominent men, given regularly, should be made so attractive that they would be eagerly attended. Secondly, more practical teaching and ward work for the student. The tendency of to-day is to magnify medicine and surgery at the expense of obstetrics. Medicine will eventually be transformed into preventive medicine and immunology, and surgery,—well as "Lens" states it, unless birth control becomes universally applied and effective, and unless maternal instincts die, obstetrics will still be a science and an art when surgery will be an emergency.

Lastly, the resident staff of maternity hospitals should be encouraged by salary and other inducements to remain for several years at the work. This would lead to more efficient service and more highly trained men. The reason for this is obvious. The consulting staff cannot be at the maternity hospital for all deliveries. That would be impossible, and yet the simplest case may turn out to be a most difficult one. This I have seen many times, and when emergencies arise they arise with surprising suddenness and have to be met promptly. There is only the senior resident to call upon under these circumstances. He ordinarily is a man of only a limited experience, also, and the patient will be fortunate if a visiting staff member should happen to be in the hospital.

Obstetricians will not have done their duty to their patients and their specialty until patients can be told with a degree of assurance that their reserve is such that pregnancy and parturition can be undertaken without undue risk. Motherhood deserves this assurance. Yet we are far from that goal, and we are not striving with all our strength to cover the distance.

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Men and Books

A SHORT HISTORY OF MEDICINE*

A Review of Dr. Singer's Book

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This little volume presents an appeal to a wider public than the strictly professional one, for, as the preface states, it seeks to place before the reader without special knowledge an intelligible account of the evolution of scientific medicine from its origin in the civilizations of antiquity to the present time. The book constitutes something of a new departure both in this, and also in its general plan, which has been to trace the principles or philosophy of medicine rather than its practice, and the gradual development of these from small beginnings to the mighty stream of special knowledge that flow into the ever-widening gulf of what we know as modern medicine to-day. The author's conception is, following Aristotle, "and after him the goodly company of Harvey, Hunter and Virchow, of Claude Bernard and Johannes Müller", that there exists an indwelling purposiveness ("Entelechy", or soul) in living things, which above all else claims our interest and consideration, and that some knowledge of this may perhaps be gained "from the view point at which the stony tracks of the separate sciences converge." Rational medicine, as here considered, involves many and perhaps all the sciences, and it is the story of these scientific elements that is told, rather than that of the individual masters of medicine through whose powers of intellect the secrets of nature have been unveiled. For this reason the biographical side is largely in abeyance, and only those names are mentioned which are believed by the author to typify or represent the various movements or actual discoveries by which scientific advance has proceeded. The book is thus essentially a history of ideas, and as such it supplies a fascinating story, which gains coherence and lucidity from the clarity of its arrangement and its masterly simplicity of style. These features, as well as its conciseness and compact form, qualify it for use as an elementary handbook on the History of Medicine, and as such it will surely go far to popularize our knowledge of the splendid heights attained by medicine in modern times, and the gradual evolution of these through the application to the facts of nature of the sublimest faculties of human intelligence.

The book is divided into six parts or periods, of which the first five, dealing with Ancient Greek medicine and that of the Middle Ages, the scientific awakening of the sixteenth and seventeenth centuries, and the "Period of Consolidation" from about 1700 to about 1825, are compressed into its first half, while the remainder of the volume is given up, under the title "The Period of Scientific Subdivision from about 1825 on," to modern medicine in its multitude of specializations. One of the finest parts of the work, from the literary and educational standpoint lies, in our judgment, in its opening chapters, under the captions "Ancient Greece" and "Heirs of Greece". This is Singer's own field, and here the origins of Greek scientific medicine, from roots struck deep in the submerged Minoan civilization and the adjoining Egyptian and Mesopotamian cultures and obscure contacts with "the brooding spirit of savage man," are yet advanced from animism by that "sweet reasonableness" of mind that made this extraordinary people the true progenitors of all scientific thought on earth. The remarkably modern features of the Hippocratic "Collections" and "Practice"; the biological revelations bequeathed, together with certain physiological errors, by the great Aristotle to posterity; the theories of the Alexandrian School; the contributions of the Roman Medical Services in sanitation and army hospital organization; and, finally the "Medical Synthesis of Antiquity", as obtained from an analysis of the Galenic writings; all these are delineated with a sharpness of outline and a discerning acumen that goes far to dispel the mental confusion which the mistaken theories of antiquity have tended to instil into the story of the infancy of medicine.

Another extremely interesting feature in this first half of the book is the selection which the author has made of those whose names are to be associated with the various great advances made in the three momentous centuries that immediately precede the modern period. For the scientific activities of many of these lies without and beyond the field of medicine proper, and illustrates well his theorem that "Medicine is a rational discipline involving many and perhaps all the sciences". Thus, under Part IV, "The Rebirth of Science" (1500-1700 A.D.), we read that Leonardo da Vinci was the first to question the views of Galen, and that he, with the other great artists of his day, may be said to have ushered in the "Anatomical Awakening" of which Vesalius is the acknowledged prophet and high priest and Ambroise Paré, the

* A Short History of Medicine. Introducing Medical Principles to Students and Non-medical Readers. By Charles Singer, M.D., D.Litt., F.R.C.P. Pp. 368. Price, $2.50. Oxford: The Clarendon Press; London: Humphrey Milford, Oxford University Press, 1928.

surgical disciple. Again, in the "Renaissance of Internal Medicine", a little later in this same period, not only was the epidemiological work of the physicians Fracastoro, Baillou, and the great Sydenham (1624-89) of prime importance, but less directly, yet equally fundamental, were the observations of the physicists Giordano Bruno (1548-1600), William Gilbert, Tycho Brahe, Galileo (1564-1642), Johannes Kepler (1571-1630) and Borelli (1608-1670), of the philosopher Descartes (1596-1650) and of the chemists Robert Boyle (1627-1691), Jacobus Sylvius, Mayou and Stahl. So also, the revival of physiology of this era, which culminated in Harvey's great discovery upon which the whole superstructure of modern medicine is reared, was based on Galileo's "Veritable charter of science" and the pioneer work of Sanctorius, who first applied the latter's principle of exact measurement to biological matters, as well as on the observations of the anatomist Fabricius ab Aquapendente and the subsequent labours of the microscopists Malpighi, Leeuwenhoek, and Swammerdam. Again, his "Period of Consolidation" of the mass of accumulated observations of the last two centuries was ushered in by Sir Isaac Newton's (1642-1727) enunciation of the law of gravitation, which, linked by him with the theories of Galileo and with Kepler's laws of planetary motion, revealed the mechanism of the universe, and established our knowledge of the "Reign of Law" under which scientific medicine has risen to such prodigious heights to-day. The dawn of modern physiology dates from the work of Albrecht von Haller (1708-1777) the great pupil of the clinical teacher Hermann Boerhaave, but here again notable advances were made by the Rev. Stephen Hales (1677-1761), mathematician and biologist, who investigated the dynamics of the circulation; by the French naturalist, de Reaumur (1683-1757); the Italian Abbate Spallanzani (1729-1799), the English physician William Prout (1785-1850), and the American army-surgeon William Beaumont (1785-1853), on the physiology of digestion; by the physicists Galvani (1737-1798), and Volta (1745-1827), who established the electrical reactions of nerve and muscle tissue; by the chemists Joseph Black (1728-1799), Cavendish (1731-1810), and the English Unitarian divine Joseph Priestley (1733-1804); in the re-discovery of the composition of the air, and the application of this knowledge to the processes of respiration and metabolism by the brilliant French chemist Lavoisier (1743-1794).

Again, during this observational period, morbid anatomy sprang into a science through the publication in 1761 of the classic treatise of Morgagni, for fifty-eight years a professor at Padua, whose efforts were seconded by Matthew Baillie, the Scot, (1761-1823), and brought to completion by the work of Karl Rokitansky of Vienna. Physical diagnosis came into its own through the discoveries of the Viennese doctor Auenbrugger (1722-1809), and the Breton physician Laennec (1781-1826). Obstetrics was established as an art by William Hunter (1718-1783), and surgery as a science by his still more brilliant brother John (1729-1793). The beginnings of the science of vital statistics were laid by the English physician Sir William Petty (1623-1687), known as the "Father of Political Economy", the astronomer Edmund Halley, the French Huguenot Abraham de Moivre, the Prussian clergyman J. P. Grisswild, and the Belgian astronomer Lambert Quetelet. Military and naval medicine took form under the hand of the Scotchmen Sir John Pringle, a pupil of Boerhaave (1707-1782), and James Lind (1716-1794), the explorer Captain Cook (1728-1779), and the Manchester health reformer Thomas Percival (1740-1804), while the humanitarian movements of prison and hospital reform found early exponents in the philanthropists John Howard (1726-1790), and Elizabeth Fry (1706-1790) in England, and, in America, in the statesman Benjamin Franklin and the great Philadelphia physician Benjamin Rush. In the control of epidemic diseases, inoculation against smallpox, introduced into England by Lady Mary Wortley Montagu (1689-1762) and endorsed there by the learned Dr. Richard Mead (1673-1754), was supported in America by the Puritan leaders Increase and Cotton Mather; the discovery of vaccination by Edward Jenner (1749-1823) opened the way to the new study of immunity; and Pierre Bretonneau of Tours did pioneer work in the differentiation of diphtheria and scarlet fever and the recognition of typhoid.

So diverse were the sources and so universal the science that fed the great stream of rational medicine in this age of inductive reasoning that preceded and underlay the modern "Period of Scientific Subdivision of Medicine from 1825 A.D.," which occupies the last and most important part of the book. Here we are astonished to realize how entirely the accomplishments of that earlier age of discovery have slipped into the background in the development out of them of the new ideas which are to-day to us a commonplace, but which have completely transformed the face and the outlook of the medical science of our time. The revolution in preventive medicine, and its entrance into legislation, both national and international, which was in its origin essentially an English movement, is a product of the last one hundred years. So also the experimental foundations of modern medicine were laid less than one hundred years ago by the great physiologists Johannes Müller (1801-1858), Claude Bernard (1813-1878), and Karl Ludwig (1816-1895). The knowledge of the cell-structure of the tissues, first perceived

by Bichât (1771-1802), and amplified by the observations of the botanist Schleiden (1804-1881), Schwann (1810-1882), and v. Nägeli, and by Max Schultze, successor of Helmholtz as Professor of Anatomy at Bonn (1825-1874), became the basis of an independent science through the publication by von Kölliker of the first text-book on histology (1850-1862). The magnificent achievement of Virchow, as set forth in his "Cellular Pathology", published in 1858, together with the conceptions of Metschnikoff (1845-1916) and Almroth Wright, created the sciences of cytology and cytopathology, of which a major development is the modern field of investigation known as "Cancer Research". The establishment of the germ theory of disease by Pasteur and Koch and their followers; the discovery of ether and chloroform anæsthesia; the understanding of the nature of inflammation and infection, and the application of this and of the principles of asepsis in the domain of surgery by Sir Joseph Lister; the triumphs of the study of immunity in the prophylaxis of various deadly infections; the conquest of the tropics through the understanding of the life history of the organisms of yellow fever and malaria, the changed view on insanity, the revolution in nursing, the tremendous advances in our knowledge of the pharmacological action of drugs and of disorders of the internal secretions and metabolic processes in general,—all these are dramatic chapters, unfolding in rapid succession a view of the magnificent achievements of scientific medicine in the present, and the immediate past. The end however is not yet in sight, nor can it be divined. The book ends on a note of warning against "the jubilant terms of victory", or a too optimistic attitude. The diffusion of interests induced by the increased specialization of to-day cannot go on for ever without defeating the very objects for which specialism was initiated. Mere accumulation of data is not an end, but only a means to an end, for correlation is essential and real advancement in knowledge can only be tested by effective advances in theory. There are whole departments of medicine in which no progress has as yet been made, and many of the higher topics of disease, such as its mode of entrance or onset in man, and why human resistance and the virulence of specific organisms vary in different seasons and localities, and a thousand like problems, still remain to us entirely unknown ground. Moreover, the concentration of "Endowments of Learning" at the present day upon the scientific departments, especially of the applied sciences, gives rise to a subtle yet very actual danger. Those who have the true advancement of medical science at heart should encourage the pursuit, not alone of this but of learning as a whole; for "Science is a way of life that may penetrate into all departments", and only in the light of the broader culture may the consummation of knowledge in any subject be attained."

In conclusion, one small comment suggests itself in the perusal of this most delightful book. Among the skilfully selected galaxy of great names, incidentally cited as having taken an essential or leading part in the forward movements of the period of scientific reawakening and consolidation, we miss those of Servetus, Caesalpinus, Commodus, said to be the discoverers of the pulmonary circulation, of Antonio Benevieni the first descriptive pathologist, and of Skoda, who would seem to us to have rendered as great a service in physical diagnosis in bringing the discoveries of Auenbrugger and Laennec to final fruition as did Rokitansky in the field of pathology. These omissions are probably not unintentional with the author, but are based by him on historical grounds, as in the case of Osler, whose name is also omitted from the later part of the book, for reasons explained in the preface. In the latter case, however, we venture the opinion that, as Boerhaave brought the clinical impetus from Padua to Leyden and there made it the foundation of systematic bedside teaching, so Osler, bringing these methods from McGill, an off-shoot of Leyden through the Edinburgh school, to the medical teaching centres of the United States, was himself responsible not only for the introduction and extension of clinical teaching methods in that country, but also for that tremendous impulse towards clinical scientific research which constitutes the heart of what is known to-day as the Renaissance of American Medicine, and that for this reason he deserves mention here.

The book is enriched with many illustrations of great historical value which add much to its elucidation and importance.

STREPTOCOCCAL CARRIERS AND SCARLET FEVER.—E. A. Lane and Edith A. Beckler, from comparative observations on children attending schools in districts where scarlet fever had been prevalent and children with no such history of exposure, came to the conclusion that there was no justification for regarding the presence of hæmolytic streptococci in throat swabs as a reason for exclusion from school. Hæmolytic streptococci were found to be fairly common among all groups of children, and of quite uniform prevalence in the months of February and March, when the experiments were made. According to the authors, until a sufficiently precise technique is available to identify the scarlet fever organism, and be sufficiently simple for general application, the control of scarlet fever must continue without the aid of throat cultures.—*New England Journ. Med.*, p. 1283, June 20, 1929.

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Hospital Service Department Notes

AN INTERESTING SUGGESTION

A recent issue of *The Canadian Hospital* published an address on "Hospital Problems in Cities and Large Towns,"* which had been broadcast a short time previously from one of our Canadian radio stations. Written by two well known hospital authorities, this article suggests, as one remedy for the cost of sickness, the application of the principles of co-operation by our hospitals. Co-operative purchasing and the development of diagnostic centres are urged. The following paragraphs are of interest as reflecting an opinion that is becoming more and more the viewpoint of the general public, of which fact we in the medical profession should be kept cognizant:

"There is no doubt that a considerable part of the present high cost of sick care can be attributed to duplication of effort and facilities. Take any city or town in Canada with more than one hospital, why should there not be more co-operative buying of everything used in the hospitals? Of course, if the matter is left to hospital officials, hospital boards, and hospital doctors, the development will naturally and inevitably be towards more individual units, and that means more individual purchases, duplicated services, and higher administration costs. If the public, who pay the price, either in direct personal hospital bills or in increased municipal and government contributions, want to buy more health service for a dollar, they can get it just the same as they can benefit from large-scale co-operation in buying and selling in other enterprises.

"In our largest cities, we may expect to see the development of large medical health or diagnostic centres that will become the workshops of medical authorities inspired with the will to keep people well rather than to take care of the actually sick. In some of our cities,—where hospitals of all kinds have already been developed extensively, the creation of a unified health centre will become increasingly difficult, unless the public makes emphatic demand for the benefits that would accrue.

"There would be tremendous gains from central heating, centralized garage and aeroplane parking facilities, co-operative purchasing benefits, scientific consultation and technical services, avoidance of unnecessary duplication of equipment and effort, joint research facilities, etc."

These suggestions for future development are now being put to practical test in various American centres, an experiment which is being watched here with considerable interest. Without doubt, some measure of co-operative purchasing, as developed by our "chain-stores" might be considered by our hospitals. Already it has proved most successful among the Red Cross hospitals. The Montreal Hospital Council is enthusiastically supported by all its members. We cannot scrap all our present urban hospital development, and there are many reasons why individual hospitals supported by various groups of public spirited citizens or organizations should be supported, but the principle of closer co-operation of existing units is fundamentally sound and should be encouraged.

HARVEY AGNEW

*GOVAN, J., and PARRY, B. E. "Hospital Problems in Cities and Large Towns," *The Canadian Hospital*, June, 1929.

CUSTOMS TARIFF AND THE HOSPITAL

Many hospitals in various parts of Canada have complained bitterly about the payment of heavy customs duties upon articles used solely in institutions for the care of the sick. Heavy duties are charged upon such articles as electrical breast pumps (27½ per cent), Diack controls for sterilization (25 per cent), ether (25 per cent), operating room lights (30 per cent), signal systems (27½ per cent). Bedpan washers are considered as washing machines and pay the usual rate, despite the fact that they are never used outside of a hospital.

One appreciates the fact that some protection is necessary to save the market for Canadian manufacturers. However, the duties which the hospitals desire to have removed are on those articles which are *not* made in Canada. The hospital field is so small, relatively speaking, that it does not pay a Canadian or foreign manufacturer to produce these articles here. Therefore, these duties are actually *revenue* duties and constitute a source of revenue which is of very doubtful justification, considering that the ultimate cost is borne by the patient at a time when he can least afford it.

There are a number of details in the present Act which were not anticipated by its revisers. For instance, impregnated x-ray catheters, which are on the free list, are actually cheaper to the hospital than are the ordinary web cystoscopic catheters which are dutiable. Metal male catheters are free, but silk or gum elastic catheters are dutiable. A splint of wood or moulded fibre is dutiable, despite the fact that its aluminum replica is free. Pedestal operating lights come cheaper if a diagnostic tube is put on them; hæmocytometers are free in a metal case and dutiable in a leather one. Water stills are dutiable unless they are destined for the physiological department. Catgut is not manufactured in Canada; § 687 states that unmanufactured catgut comes in free, and yet hospitals importing raw catgut in coils, with the fat still unextracted and considerable preparation yet to be made, are charged duty. Many hospital items are not mentioned and the interpretation of classification is said to vary considerably at various ports of entry.

Many other articles, such as examining tables, food mixers, dish-washers, methyl alcohol, washing machines, and other equipment, which may be used elsewhere than in hospitals, should be admitted free of duty, if their importation *for hospital use only* can be assured. We realize that this provision might be subject to abuse, but adequate safeguards could be provided.

A number of provincial hospital associations

have requested that these tariff regulations be revised. The total loss of revenue to the Government from such revision would not be great and yet the individual saving to each struggling hospital would be sufficient to permit the purchase of certain much needed equipment. One large western hospital recently paid ninety-six dollars duty on Diack controls alone. Is it any wonder that the majority of hospitals dispense with any accurate check on their sterilization technique?

It is realized that the policy of the government is to facilitate the use of equipment essential to life and health, and certain items such as x-ray machines, microscopes, and metal surgical instruments are now on the free list. However, the present regulations, as they apply to hospitals, are greatly in need of revision. The doctors of Canada can perform a real service to their local and all other hospitals if they will undertake to speak to their federal representatives about the desirability of modifying these impositions.

HARVEY AGNEW

Medical Societies

THE ONTARIO MEDICAL ASSOCIATION

ANNUAL MEETING, DISTRICT NUMBER SIX

The annual meeting of District Number Six of the Ontario Medical Association was held in the Ontario Hospital, Cobourg, on Thursday, September 5, 1929, with an attendance of about eighty members of the profession from the surrounding counties. Commencing at two o'clock in the afternoon, a very excellent program was presented, in which the following took part:—

Dr. W. C. Herriman, Cobourg, "Points in regard to admission of patients to Ontario Hospitals."

Dr. Geo. H. Stevenson, Whitby, "Diagnosis in mental diseases."

Dr. I. M. Rabinowitch, Montreal, "Diagnosis and treatment of thyroid diseases for the general practitioner."

Dr. A. P. Hart, Toronto, "Infant feeding."

A very enjoyable banquet was arranged by the local hosts, a large number of ladies being present. Vocal solos were contributed by Dr. J. C. Smith of Lakefield and Dr. F. P. Lloyd of Cobourg. Greetings were extended to the visitors by Mayor McCartney of Cobourg.

Immediately following the dinner, Mr. H. W. MacDonnell, of the Industrial Relations Department of the Canadian Manufacturers Association, Toronto, gave an address on "State insurance." This was very much appreciated by all who heard it, inasmuch as the subject was very ably dealt with from the standpoint of the layman. Dr. John Ferguson, President of the Ontario Medical Association, then gave a talk, dealing with the same subject from the standpoint of the medical practitioner. Dr. T. C. Routley, Secretary of the Ontario Medical Association, gave a brief talk on matters of interest in regard to organized medicine. This was followed by a most interesting and enjoyable talk by Dr. L. J. Austin, of Kingston, on "The Kings of France."

During the afternoon, the visiting ladies were entertained at bridge and afternoon tea at the Golf Club, where a very delightful time was spent prior to assembling at the banquet.

A brief business session was held at which Dr. F. C. Neal of Peterborough was renominated as Counsellor and Dr. Geo. H. Stobie of Belleville was elected Vice-Counsellor for the ensuing year. It was also agreed that the annual meeting of the District for 1930 should be held in Peterborough.

ANNUAL MEETING, DISTRICT NUMBER NINE

District number nine of the Ontario Medical Association met in annual conference at North Bay, on September 9th, delegates being present from all parts of the district, some of whom motored more than five hundred miles to attend.

During the morning session, held in the Masonic Temple, excellent addresses were delivered by the following speakers: Dr. H. B. VanWyck, Toronto, "Uterine hæmorrhage;" Dr. Geo. H. Murphy, Halifax, "The chronic appendix;" Dr. Gordon E. Richards, Toronto, "The x-ray investigation of the urinary tract."

At 1.30 p.m., the group sat down to luncheon at the Golf Club, following which brief addresses were delivered by Dr. Ross Millar, representing the Department of Health of Canada, and Dr. T. C. Routley, Secretary of the Ontario Medical Association. The balance of the afternoon was given over to golf, most of the men taking part.

At seven o'clock, an excellent dinner was served in the Empire Hotel, with an attendance of approximately thirty.

The evening addresses were as follows: Dr. John Ferguson, Toronto, President of the Ontario Medical Association, "Matters of interest to the medical profession;" Dr. A. T. Bazin, Montreal, President of the Canadian Medical Association, "The pitfalls of practice;"

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Dr. Geo. S. Young, Toronto, "Hypertension."

Dr. T. C. Routley outlined the new plan being put into effect for periodic physical examinations. This was followed by the showing of an excellent film on physical examinations, which has been prepared expressly for the Canadian Medical Association.

The conference was very ably presided over by the District Counsellor, Dr. W. J. Cook, of Sudbury.

University Notes

University College, London, 1826 to 1926

A very interesting and appreciative story of the gradual development of University College, London, into the greater institution of the University of London, appears in the *Lancet* of July 20, 1929, as a review of a recent volume by H. Hale Bellot of the University of Manchester, from which we quote.

Sir Thomas Gresham's foundation in the middle of the sixteenth century introduced the idea of a University of London 200 years before the inception of the present University, but from one cause or another it had never borne fruit. It was not until the year 1820 that a real beginning was made, when Thomas Campbell, the brilliant erratic poet, went to Bonn, and there was struck by the mutual tolerance in University circles of protestants and catholics and by the liberal treatment accorded to the Jews; at once the desire for a University for London arose in his mind, which should admit to its privileges and opportunities all who wished to learn without distinction of creed. There can be no doubt that it was Campbell's promulgation of this sentiment that led ultimately to the establishment of the University of London. The older universities had done much splendid work and were doing it; they had changed also in response to the changes in the life and thought of the country, but the work they were doing, excellent though it was, did not fulfil all the needs of the time. The enormous advances in physical science, the changes in many branches of exact knowledge, and the development of new classes in society whose interests differed in many ways from those of the dominating sections of the previous century—all these things had led to a widespread feeling that there was room for drastic alteration in the mode of training those who had to take part in the business of life in every field of activity. Science was not receiving the place in education which its ever-increasing importance in manufactures demanded. But—and it was, of course, the fact of prime importance—in the older universities even that measure of science which was taught, and which was capable of practical application, was not available to that large portion of the population which did not belong to the Established Church. In this respect there were, indeed, slight differences between the attitude of Oxford and Cambridge, but at neither University could a degree be obtained by any nonconformist. Thus there was a large body of all denominations anxious to have systematic teaching in many branches of modern learning who were unable, in this country, to get any university training at all. It was not that in Great Britain there was any lack of modern thought; in Scotland especially much had been done during the latter half of the eighteenth century to advance the cause of modern learning; but the fact remained that the whole country was not benefiting as it should have done from the accumulating stores of knowledge, and this at a time of great material development.

Exactly at this place a great factor in the demand for a modern university in London was furnished by the position of medical education. It was seen to be unreasonable that a London student of medicine should be unable to obtain a degree in London, but be forced to go to Oxford or Cambridge, or to proceed to other divisions of the Kingdom or abroad. Moreover, though there was an enormous amount of clinical instruction available in London, all the systematic teaching was on the whole ill-organized; for the large number of medical students in London the need for a regular and complete course of medical teaching in London was urgent, and this made obvious the great desirability of the establishment of a university medical faculty in the metropolis. To Campbell must be given the credit of bringing to a head the recognition of this need; the original idea was his and credit is often given to others which, in part at least, belonged to him. But a large number of progressive and highly educated men resident in London soon came to take part in the attempt to form a metropolitan university and Campbell was soon joined by, among others, Brougham, Bentham, Grote, Mill, Tooke, Macaulay, Birkbeck, and Goldsmid, who may be taken as typical of those who shared in the work. Ultimately it was resolved to start a joint stock company, and under a deed of settlement it was arranged to raise a capital of not less than £150,000. Sufficient money was received, not without delays and disappointments, to justify

the laying of the foundation-stone of University College under the title "London University," and this was done on April 30, 1927.

Then came the task of appointing the professors. The new Council of the College wished to choose men of high standing, but the fact that the emoluments of the professors had to depend mainly on the fees of the students, while the students had not yet materialized, limited the number of applicants, and many difficulties arose. Of the professors appointed some in nearly every department resigned after a short tenure of office, and the lack of sufficient capital increased greatly the responsibilities of the Council. Of all the departments during the first few years of the life of University College, the most successful by far was that of medicine. In the first session there were 183 medical students, in 1831 there were 252, and in 1834 the number had risen to 390, when the success of the new institution led naturally to imitation by other metropolitan medical schools and the rate of increase fell off. At first the medical students of University College had to seek their clinical knowledge where they could obtain it, but University College Hospital was opened in 1834, and this disability was removed. But Mr. Hale Bellot brings out clearly in his book the anxious time which the College had before it for many years. The establishment of King's College, London, detached many who would otherwise have been students. The Law Society and the Inns of Court established courses of lectures on the various branches of legal study, and this reduced the number of legal students, and the need of a charter to give power to confer degrees was a serious drawback. It was exactly this proposal on the part of the Council that was the cause of the greatest opposition; this came particularly from Oxford and Cambridge and the Royal College of Surgeons of England, and it seems, from physicians and surgeons of the medical schools of London other than the school of University College Hospital. But towards the latter half of 1836 the Government of the day took a hand. Two charters were drafted, by one of which the body hitherto called London University was incorporated as University College, London, while by the other charter an entirely new body was created, to be styled the University of London with the full powers of a university. Thus the long struggle was ended in what was probably the best settlement, despite subsequent history.

It is certain that the stimulating influence of the work done in a University College had an enormous effect on many other teaching bodies in London and elsewhere; it showed them the need that existed for a wide change in the methods of instruction. At first in this way the College warred against its own interests. The excellent example which it set led to a diminution of the number of its students, who went to other educational bodies, which were now granting increased facilities. It was not until the sixties that the fortunes of the College were placed upon a firm basis, but by that time it had become generally recognized that it had achieved and was achieving famous deeds in enlarging the sphere of learning, in removing obstacles which hindered the entry of promising students, and in turning out graduates fit to hold great national positions. Since that time the progress has been continuous. In many departments of learning the College has been a leader, and from its walls many professors have gone out as missionaries of learning to other seats of education. During the hundred years that have passed since its foundation it has done, perhaps, more than its famous founders expected, while it is entering on its second century stronger than it has ever been.

University of Glasgow

Retirement of Sir Donald MacAlister

The announcement that Sir Donald MacAlister, Bt., M.D., had decided to retire from the positions of Principal and Vice-Chancellor of Glasgow University was briefly mentioned in the *British Medical Journal* of August 3rd (p. 228). The Principal is one of the most distinguished Scotsmen of the time, and has been honoured by many of the important universities of the world. His academic career is an unbroken record of brilliant achievement. He was born at Perth in 1854, and is the son of the late Mr. Donald MacAlister, formerly of Tabert, Loch Fyne, Argyllshire. Having received his early education at Aberdeen, he went to Liverpool before entering St. John's College, Cambridge, and in those early days were developed gifts of mind and character which were to carry him to eminence. Senior Wrangler and First Smith's Prizeman at Cambridge, he was elected a Fellow of his College, and afterwards became tutor and director of medical studies there. Later he was Lecturer in Natural Philosophy at St. Bartholomew's Hospital, London, and in 1899 he became Thomson Lecturer at Aberdeen. For many years he represented Combridge on the General Medical Council, and in 1905 he succeeded Sir William Turner of Edinburgh in the presidency of that body. His appointment to the Principalship at Glasgow University in 1907 broke the line of divinity principals. He succeeded the Very Rev. Principal Story. Combined with his eminence in arts and science, and his deep and varied scholarship, Sir Donald MacAlister has great business aptitude and capacity for organization. His tenure of high office at

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Gilmorehill will be memorable, probably historic. He saw the foundation of many new chairs and lectureships, among them being the chairs of obstetrics and gynæcology, surgery, medicine, and pathology, at Glasgow Royal Infirmary; and at the University the chairs of Scottish history and literature, French, German, bacteriology, organic chemistry, mercantile law, and applied physics. Sir Donald MacAlister has a long list of publications to his name, including a translation of *Ziegler's Pathological Anatomy*. A master of tongues, he speaks no fewer than fourteen languages with fluency. The appointment of a successor to the Principalship will be made by the Crown authorities.—*Brit. M. J.* **2**: 273, Aug. 10, 1929.

Special Correspondence

The London Letter

(From our own correspondent)

For some reason or other August appears to be an important month for the production of statistics in a somewhat wholesale manner, and official publications have recently been showered upon the press. It has been said that statistics are like sausages; it all depends on whether you know the old woman who makes them. Fortunately, the makers of most of the recent important statistics have unshakeable reputations, and, indeed, with Professor Major Greenwood in the chair of vital statistics in London University it behoves all public officials to take great care with their wares. Sir George Newman's report "On the State of the Public Health" indicates that we are approaching a stationary population, with the birth rate down and the death rate down, and the preponderance of older people among the population will probably mean that an increase in the mortality rates of such diseases as cancer will show itself in the next few years. On the other hand the infantile mortality rate is down to the lowest figure for this country, 65 per thousand births. While congratulating ourselves on this, we are still ashamed of our maternal mortality figures which are the highest on record and as has been indicated in these notes the public health authorities and the medical profession are considerably alarmed at the position. Sickness apart from mortality took its usual tremendous toll during the year and more than fifteen and one-half million pounds had to be paid out by the Approved Insurance Societies in sickness and disablement benefits. Another report of great interest was Dame Janet Campbell's part of the international inquiry into infant mortality for which she has conducted the English section. It is strongly urged in this report that there must be extension of the present facilities for home nursing, so that skilled nurses can attend all sick babies in their homes, and it is also suggested that the most satisfactory way of ensuring timely medical attention for babies would be by an extension of the National Health Insurance Acts to the dependents of insured persons. A third report of some interest was concerned with a twenty-five years' study of scarlet fever, diphtheria, and typhoid fever by the same clinical observer, Dr. E. W. Goodall, in one of London's largest fever hospitals. Scarlet fever has changed its characteristics in a very remarkable way during this period, which dated from 1895 to 1914, and there has been so far no indication that it is reverting to its original type. Nowadays it is a relatively mild disorder, with a mortality rate of less than a third of what it was in 1895 for children of less than five years of age, and the most serious complications show a similar striking decrease. A fourth report deserves mention, if only as a warning on the interpretation of figures. This is the report of the medical officer of health for the city of London. A foreigner might well rub his eyes when he reads that only 82 children were born in the City of London during 1928. This is because, of course, the square mile which comprises the area of the City is given up for the greater part to business premises and it has only the resident population of a small country town.

Professor Wagner Jauregg, of Vienna, who suggested the use of malaria protozoa for the treatment of general paralysis of the insane as far back as 1887, was only able to report the first definite successes of his work in 1917, and by 1922 the method was adopted as an experiment in certain asylums in this country. The Board of Control, who look after the interests of all the lunatics here, urged the superintendents of institutions to try the method, and now Surgeon-Rear-Admiral Meagher has collected the results of malarial treatment and published them in a special report (H. M. Stationery Office 1929. Price 2s.) For comparative purposes he followed up over 600 cases of general paralysis in institutions in 1923, and, by 1927, 90 per cent of these were dead, 8 per cent were still detained, and only 2 per cent were living at home. Of the 152 cases of the disease treated by malarial therapy in 1923, 53 per cent were living in 1927, and, taking the whole group of 1,500 cases which have received this treatment, 321 are now able to follow some

sort of employment. These figures have been recorded and analyzed with the greatest care, and personal visits to many of the discharged patients have been made, so that it is really possible to say that malaria offers a most excellent chance of considerable improvement to a large proportion of general paralytic cases.

The death of Ray Lankester, the greatest of Huxley's pupils, last month deprived the scientific world of one of its most energetic and stimulating figures at the age of 82. He was the son of a medical man, and although he began what was almost the preliminary training for a medical career at Oxford he chose to follow Huxley's advice and study biology untrammelled by its direct application to medicine. At the age of twenty-seven he was appointed Professor of Zoology at University College, London, and here and elsewhere he had considerable influence on the careers of many medical students. Had he entered the profession he would undoubtedly have risen to a high position, although from his boisterous temperament one hesitates to think of him dealing with out-patients, for example. His writings for the public are universally read and are unequalled for their clarity of style and breadth of interest. He will be greatly missed.

ALAN MONCRIEFF.

London, September, 1929.

The Edinburgh Letter

(From our own correspondent)

Edinburgh's death rate during 1928 was 13.7 per 1,000 of the population. The infantile mortality for the same period was 75 per 1,000 births—the lowest ever recorded in the city. While these figures may be regarded as satisfactory, the birth rate of 17.3 per 1,000 is also the lowest that has ever prevailed in the city, with the exception of the war years 1917 and 1918. In 1861 the figure was 33.4.

Dr. William Robertson, F.R.C.P., commenting on these figures in his annual report, draws attention to the maternity and child-welfare departments, in supervising expectant and nursing mothers and in preserving the lives of the young. The appointment of four whole-time assistants in connection with the maternity and child welfare services has already proved its wisdom.

Under tuberculosis there were fewer notifications than ever before, while the number of those dying from pulmonary tuberculosis was the lowest that has ever been recorded. In twenty-eight years there has been a fall of more than 50 per cent in the deaths from this malady. The figures for non-pulmonary tuberculosis are even more satisfactory. In 1900 there were 270 deaths from this disease, this number has now declined to 103 in spite of the population having greatly increased. No doubt when the slums are still further cleared and better facilities are provided for obtaining fresh air, this number will go down still further.

Only eight deaths were caused by scarlet fever during the past year. The lowest death rate recorded in the city since 1912 applied to diphtheria.

In his report on venereal disease, Mr. David Lees, F.R.C.S., shows how well his department is managing to cope with this difficult social problem. He agrees with other administrative officers that some form of compulsion is urgently required, to deal adequately with those, who, through indifference or ignorance, positively refuse to complete their cure.

Dr. Robertson remarks on the great improvement in health which has been demonstrated among persons removed from the overcrowded homes of condemned slum areas to the fresh surroundings of the various municipal housing schemes which have been erected since the war. All this is very reassuring, especially when a comparison is drawn between the conditions of to-day and those which pertained sixty years ago. The dwellings in the congested areas were, at that time, without water supplies and were still dependent upon public wells. A deplorable description of the homes of the poor was given by an Edinburgh journalist in 1867, who stated that "much less is known of the closes of Edinburgh than of many parts of the interior of Africa," and that "the internal arrangements of the Red Indian's wigwam are much more familiar to the Christian public than is the condition of the hovels in which many of our town's people live." Closes, stairs, passages and houses are described as being in a shocking state, and accumulations of filth, ashes, etc., are said to have been found under beds, behind doors, and in corners of rooms, but in several cases a desire to be clean and tidy is given expression to by the evidence of white-washed fireplaces. Some houses are described as being devoid of windows, and in others the doors are panelled with glass to borrow light. One house is described as a "miserable den." "The furniture consists of a small table, a teapot, a few pieces of crockery, a stone by the fireplace—the only 'chair or stool' to sit upon; a few rags lying on the cause-wayed floor in the corner—the only bed in the place; while an open channel crosses the floor draining water from an undiscovered source." From the structure of the apartment the journalist concludes that the place must have been at one time a cowshed, but not being sufficiently lighted and ventilated for cattle, had been let for a dwelling house; and, visualizing the economic problem facing the advent of the sanitarian, asks what is the use of a regulation for washing and sweeping of

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common stairs for a dwelling house of six or seven storeys in which there is not a broom from top to bottom. Yet bad though these conditions were sixty years ago, how much better were they than those which pertained in the "good old days" not so very long before. Then, the Edinburgh housewives disposed of their slops through the windows, and the cry of "Gardyloo" (gardez l'eau) warned the passers-by to duck their heads and dodge a malodorous shower bath. In those days pigs grunted and dug amongst the dirt and sweepings of the High Street. It will not be forgotten how Dr. Samuel Johnson and Boswell braved the perils and the smells of the Canongate on the evening of August 14, 1773. "It was a dark night," says Bozzy, "and I could not prevent his being assailed by the evening effluvia of Edinburgh. As we marched slowly along he grumbled in my ear 'I smell you in the dark'!"

Dr. Robert Thin, in his Harveian Oration on Archibald Pitcairne, who was Professor in Physics in Leyden and Edinburgh at the same time, referred to the fact that in former days in Edinburgh, physicians did not consult in their own houses but in one of the taverns they were in the habit of frequenting, and thither messages were sent when the doctor's services were required. In his Latin poem "To Strangers coming to Edinburgh," Pitcairne displays an intimate acquaintance with several of these "houffs," to use a Scots expression, but the one he favoured most was a noisome grotto which never saw the sun, approached by a dark descending staircase in Royal Bank Close, opposite the east end of St. Giles' Cathedral. The wits who frequented this tavern christened it "The Greping Office," as the only way to approach it safely was to grope or "grepe" along the walls. There Pitcairne was usually to be found, and was generally ready to receive patients by 6.30 a.m. It is said that when he was detained here over night his servant had instructions to bring him a clean shirt in the morning. On one occasion this order was executed for six mornings in succession, and when Pitcairne finally emerged from his subterranean den and made his way home, the six shirts were found on him, one above the other! "Autre jours, autres moeurs," as the French have it.

A new residential hall for men students is shortly to be opened in Edinburgh. This student residence, which is to be known as Cowan Hall, will be situated on the south side of George Square, within a few minutes of the University. One of the houses which has been re-constructed for this purpose was formerly the home of Sir Noël Paton, the well known artist, while almost next door is the former residence of Peter Guthrie Tait, the former Professor of Natural Philosophy, possibly better known to many as the father of Freddy Tait, an earlier amateur golf champion. Mr. Thomas Cowan, LL.D., who gifted the sum of £55,000 for this new residential home, gave the first £15,000 in recognition of the work of the students during the general strike. Mr. R. D. Maclennan, M.A., has been appointed Warden. He is a lecturer in philosophy, and a philosophic outlook will probably assist him in running a student's hall successfully. The present accommodation consists of 100 study bedrooms, of which 28 can be shared by two students, along with dining room, common-room, library, and tennis courts. Residential halls have long existed in Edinburgh. Professor Patrick Geddes and the Town and Gown Association instituted University Halls on self-governing lines thirty years ago, and the three residences—Ramsay Lodge, St. Giles House, and Blackie House—have filled an important place in Edinburgh student life and still continue to flourish.

Professor Wilkie, of the Chair of Surgery, has been granted leave of absence by the University Court from 2nd October to 6th November, 1929, as he has been invited to give the Murphy Oration at the Congress of the American College of Surgeons in Chicago, and to address the Inter-State Post-Graduate Medical Association of North America at Detroit.

The 11th General Hospital R.A.M.C., T.A., commanded by Col. A. Pirie Watson, O.B.E., F.R.C.S., was in camp at Barry, Forfarshire, during the last two weeks of July. The 155th (Lowland) Field Ambulance R.A.M.C., Territorial Army, was in camp at Barry at the same time. This unit is commanded by Lt.-Col. George Gibson, formerly of the Royal Canadian Army Medical Corps.

GEORGE GIBSON.

23 Cluny Terrace, Edinburgh.

BEER AND CANCER.—In a Belgian journal associated with the brewing industry there is published an intriguing study of the influence of beer on cancer. The question was recently asked at the Congress of the General Federation of Brewers whether beer could in any definite way protect against this disease. This suggestion was based upon the fact that cancer never appeared among the causes of death of young employees in the brewing industry. Support was given to this view by Dr. Ducamp, head of the public health department in Lille, after he had verified the statistics of the last ten years. An investigation is actually in progress throughout France with a view to establishing the accuracy of the hypothesis.

Topics of Current Interest

VACCINATION

Considerable uneasiness has been aroused among public health officers of recent years by the occurrence of certain nervous symptoms usually assuming the form of encephalitis, but sometimes of meningitis or myelitis, as a sequel of vaccination. The disease, which, as a rule, develops from nine to fifteen days after vaccination, differs from epidemic (lethargic) encephalitis in the following respects: (1) The greater uniformity of the symptoms compared with those of epidemic encephalitis. (2) The short duration of the acute stage, viz., seven to fifteen days, compared with a month or more in epidemic encephalitis. (3) The absence of paralysis, particularly of the eye muscles. (4) The presence of Babinski's sign, which was found in all the cases. (5) The absence of any residues in cases which recovered. (6) The much higher mortality (41.2 per cent) than that of epidemic encephalitis (25 per cent). (7) Certain anatomical differences.

The importance of this post-vaccinal encephalitis, of which until recently a large proportion of the profession appeared to be unaware, is best shown by the fact that it led to the formation of a special committee, appointed by the Ministry of Health in conjunction with the Medical Research Council, under the Chairmanship of Sir H. Rolleston, as well as to one appointed by the League of Nations. The conclusion of the Rolleston Committee was that though vaccination was not the sole cause it played some part in the causation of the encephalitis and the other nervous sequelæ mentioned. It was pointed out that in post-vaccinal nervous diseases the lesion of the central nervous system was similar to that found in the nervous sequelæ of the acute exanthemata and bore certain resemblances to the lesions of disseminated sclerosis. The Committee recommended that in place of the officially advocated four insertions, trial should be made of vaccination and revaccination in one insertion with a minimum of trauma, and deprecated multiple insertions and cross hatchings.

The points emphasized by the Committee of the League of Nations were as follows:—

(1) The rarity in the countries affected, of which England and Holland were the principal, of post-vaccinal encephalitis compared with the number of vaccinations.

(2) The fact that the encephalitis was not a mere coincidence.

(3) The distinction of post-vaccinal encephalitis from lethargic encephalitis. Children between 3 and 13 years are particularly predisposed to post-vaccinal encephalitis, while early infancy and early adult life are almost entirely immune.

All the observations tended to show that the encephalitis was not connected with certain strains of lymph or certain accidents in its preparation.

(4) As regards the etiology, the vaccine virus was not in the Committee's opinion solely responsible, but there was also some unknown factor present as well, whether bacteria, ultra-virus or latent virus, which as the result of reciprocal action gave rise to the symptoms.

In conclusion, the Committee emphasized the importance of primary vaccination in the first year of life rather than in the later years of childhood.—*Post-Graduate M. J.*, **4:** 161, June, 1929.

BRUCELLA ABORTUS INFECTION IN MAN

Dr. W. D. Champneys read a paper in the Section of Pathology and Bacteriology of the British Medical Association at Manchester on *Br. abortus* infection in man. He briefly described the history of our knowledge of this disease, and gave a short description of its bacteriology. His main desire was to bring it more conspicuously to the notice of bacteriologists and clinicians, so that if, as was suspected, there were an appreciable number of cases undiagnosed in this country, they might be more readily detected. The number of cases reported on the Continent was steadily increasing, and this was due entirely to more widespread recognition of the disease. Clinically it corresponded closely with *Br. melitensis* infection, and the most useful diagnostic laboratory tests were hæmoculture, inoculation of a guinea-pig with blood intraperitoneally, and an agglutination test; a titre of 1 in 80 was sufficient for diagnostic purposes. Dr. G. R. Ross (Rhodesia) said that in Rhodesia they had definitely established that the prominent type of undulant fever was due to *Br. abortus*. In diagnosis hæmoculture was most important, but the organisms frequently required long incubation to show up, and at least fourteen days' observation was necessary before the cultures were discarded. Agglutination tests were so far indecisive, as the serum of a patient suffering from a *Br. melitensis* infection reacted similarly. Dr. Parry Morgan (Cardiff) had met with four cases of brucella infection, all of which would have been missed but for laboratory investigations. Of 46 bloods examined for enteric fever 2 showed agglutination of 1 in 250, and both were cases of undulant fever. Of 1,325 cases of blood sent for the Wassermann reaction 5 showed doubtful agglutination of 1 in 40. The milk of infected cows showed distinct agglutination up to 1 in 500; the opacity of the diluted milk did not interfere with the reading.—*Brit. M. J.* **2:** 251, August 10, 1929.

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POISONING FROM METHYL CHLORIDE USED IN DOMESTIC REFRIGERATORS

At the annual session of the American Medical Association held in Portland early this month the House of Delegates, recognizing the dangers of toxic gases used in industry and in the home, asked the Board of Trustees to appoint a committee to look into the situation and to advise the medical profession and the public for the good of the public health. A committee of men who have given special consideration to the subject has now been appointed and reports will no doubt soon be forthcoming as to the dangers involved and as to the needs of research in order to establish information not now available. The committee appointed by the Board of Trustees includes Dr. H. Gideon Wells, professor of pathology in the University of Chicago; Dr. R. L. Thompson of the United States Public Health Service; Dr. Carey P. McCord, associate professor of preventive medicine in the University of Cincinnati College of Medicine; Yandell Henderson, Ph.D., professor of physiology in Yale University School of Medicine, and Paul N. Leech, Ph.D., director of the chemical laboratory, American Medical Association. In the meantime additional deaths from the use of methyl chloride in mechanical refrigeration have occurred in Chicago as determined by a special coroner's jury, which has recommended the discontinuance of the use of methyl chloride as rapidly as possible, the temporary use of warning gases with methyl chloride until substitution of some less hazardous gas shall be made, and a definite warning by manufacturers to users of such apparatus as to the hazards involved. In order that users of mechanical refrigeration may have information, *The Journal* publishes, under general news in this issue, a list of various trade names of mechanical refrigerators with the type of refrigerant used in each instance so far as is now known.—*J. Am. M. Ass.*, **93:** 288, July 27, 1929.

THROMBO-ANGIITIS OBLITERANS

The morbid anatomy of thrombo-angiitis obliterans was first described accurately in 1879, though from examination of one case only, by von Winiwarter, who incriminated excessive smoking as a causal factor. Special attention was directed to it in New York by L. Buerger, who insisted on its racial incidence, and in London by Parkes Weber. A recent Mayo Clinic monograph[1] gives a complete account of the disease, based on observation of over 300 cases and a thorough review of the literature. The cases were observed at the Mayo Clinic from 1922 to 1927, inclusive, and each year the number recognized increased so that finally this disease accounted for 0.25 of all male admissions. Rather more than half the patients were Hebrews, but the incidence in Gentiles is increasing. The authors of this monograph regard abuse of tobacco as possibly a contributory factor, but not as primarily responsible; they consider that, though proof is still lacking, there is much evidence pointing to an infective origin. The average duration of thrombo-angiitis obliterans is five years. It begins with intermittent claudication due to anoxæmia; then follow postural changes, redness or pallor on dependency or elevation, and then pain, quite distinct from that of claudication, when the patient is at rest; lastly trophic lesions—ulceration and gangrene—supervene. But the clinical picture varies, and different types of the disease are described with an analysis of the symptoms. In two cases only was there reason to suspect coronary thrombosis, and it is remarkable that fatal pulmonary embolism never occurred, thus contrasting with post-operative phlebitis. With earlier diagnosis and treatment the prognosis is regarded in a more optimistic light than formerly. Special methods of investigating the disease employed by the authors include estimation of the rate of heat elimination, of the surface temperature, and of the vasomotor condition in the extremities. Treatment naturally depends on the stage of the condition. Prophylactic and other medical measures, such as radiant heat and non-specific protein shock therapy, are described; and the indications and results of surgical procedures, including sympathetic neurectomy, are passed in review. The authors note that all kinds of treatment were less effective in Hebrews than in Gentiles.—*Brit. M. J.*, **2:** 24, July 6, 1929.

1. Thrombo-angiitis Obliterans: Clinical, Physiologic, and Pathologic Studies. By George E. Brown, Edgar V. Allen, and Howard R. Mahorner. Philadelphia and London: W. B. Saunders Company. (14s. net.)

FATALITIES FROM THE GASES USED IN REFRIGERATION

Deaths as a result of gas leaks from automatic refrigerators, such as occurred in Chicago recently, are unlikely to be repeated very extensively elsewhere, in the opinion of government experts. Of 63 makes of electric and automatic refrigerators compiled in a recent list, only 23 make use of methyl chloride, the gas responsible for the Chicago fatalities, as a refrigerant. Of these, only one is a nationally advertised make. Furthermore, the only danger comes from central refrigerating plants, used in apartment houses, where the refrigerant is piped to a number of cold boxes throughout the building. Even when methyl chloride is used in a small independent home unit, a leak would not liberate enough of the gas to cause danger.

Sulphur dioxide, the choking gas that results from the burning of sulphur, is the most popular cooling compound, and is employed in the two most widely used electric refrigerators. While this is irritating to the nasal passages, it is not really poisonous, in the same sense as the poison gases used during the war. Its pungent smell is

recognized before it reaches dangerous concentrations. Ammonia, used in many refrigerators, is safe for the same reason.

Methyl chloride is odourless, and, while it is not poisonous in itself, a large concentration would exclude the necessary oxygen, and death would result if a person were kept in a closed room with it. Many manufacturers use it in combination with either ammonia or sulphur dioxide, which have characteristic odours that reveal leaks. For a similar reason, manufacturers of illuminating gas, which consists largely of odourless and poisonous carbon monoxide, mix other gases with it that give the characteristic odour. One manufacturer of refrigerators makes use of ethyl chloride, which is not poisonous but is highly inflammable. Attempts have been made to mix methyl bromide with it to lessen the fire danger, but methyl bromide is truly poisonous.

Carbon dioxide, which makes up a large percentage of our very breath, is used in one make of refrigerator. This is also the refrigerant used in cooling systems of battleships.—*Science News-Letter*, July 13, 1929.

THE LIGHT REQUIREMENTS OF PLANTS

It might seem to the layman as if a growing plant out in the open undergoes such extremes of light and darkness that it would thrive under almost any conditions of quality or intensity of radiation. But this is not the case, and plants are easily affected by changes in the colour or duration of light, according to Dr. John M. Arthur, of the Boyce Thompson Institute, addressing the members of the Optical Society of America.

Though plants can be grown under electric light, some do not thrive if the light is kept on all the time. The tomato, he said, is killed by continuous illumination. After about five days a leaf injury appears and this increases until most of the leaves have withered and dropped off. In general, eighteen or nineteen hours a day of light gives as rapid growth as when the light is continuous. Buckwheat takes almost anything that is offered, for it flowers with anywhere from five to twenty-four hours of light a day.

Just as the short rays of light, known as the ultra-violet, cause sunburn and damage to the human tissues, so do they affect plants. Dr. Arthur also told of recent experiments which show that the very short waves will soon kill plants. Ultra-violet rays were produced with a quartz tube mercury vapour arc lamp. Filters were placed over the lamp to cut out some of the shorter rays. In this way it was found that when rays as short as 237 millionth of a millimetre (about one hundred-thousandth of an inch) were used, a large part of the leaf area of a tomato plant was killed in thirty seconds. But when the shortest rays were 286 millionths of a millimetre, there was no injury at all. In sunlight at sea-level, the shortest ultra-violet rays are about 300 millionths of a millimetre in length. The shortest visible violet rays are about 400 millionths, and the longest red rays that we can see about 700 millionths. All of the visible colours come between these limits.—(*Science Supplement*, Nov. 9, 1928).

THE MOVEMENTS OF PLANTS

No more beautiful series of researches has ever been carried out than those recorded by Sir Jagadis Chunder Bose in his work on the Motor Mechanism of Plants. Certain definite movements in response to stimulation have long been known in connection with particular plant structures, such as the anthers of Berberis; but until Bose interested himself in the subject it was unsuspected that motility could be considered as a universal characteristic of plants, or that they possessed motor organs comparable to muscles, and conducting tissue comparable to the Purkinje fibres of the heart. The movements of the protoplasm within the cell membrane are well known to every student of botany, but it remained for Bose to show that under normal environmental conditions the cell exhibits a liquid tumescence or tonus, and that stimulation causes a depletion of liquid with a resulting diminution in the size of the cell—that is to say, a contraction. By means of experimental apparatus of extraordinary delicacy, devised by himself, Bose has succeeded in measuring the amount of this contraction in the individual cell, and has shown it to be about one thirty-millionth of an inch under feeble stimulation. Cells specially endowed with contractility are segregated into definite masses or tracts, somewhat analogous to muscles, subserving definite ends such as the movement of a leaf or the propulsion of sap; and they may be recognized microscopically by definite staining reactions. Bose has taken graphic records of the curve of contraction, with its latent or refractory period, its rapid rise and more gradual fall, and its associated electro-negative variation, as in animal muscle. He finds that the response is of the "all-or-none" type exhibited by heart muscle, and that the effect of physical and chemical agents and poisons on the curve corresponds to that observed in animal tissue. Of particular interest are the observations on rhythmical and peristaltic movements. Good examples are afforded by Desmodium and Biophytum. The small lateral segments of the trifoliate leaf of the former plant exhibit automatic rhythmical contractions, each contraction being completed in about a hundred seconds; of the latter plant, when in a condition of good tonus, it is said that a mere touch of one of its leaves may set all its leaflets quivering, throwing them, it would seem, into clonic spasm. The explanation of the automatic rhythmical

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contractions is that usually accepted in the case of muscle—namely, the action of a continuous external or internal stimulus on a contractile tissue exhibiting a refractory period. Bose has made the interesting discovery of a connecting link between the single contraction or twitch and automatic rhythmical contractions. He has observed that while a single weak stimulus will provoke a single contraction, a single stronger stimulus will produce a series of several contractions; thus it appears that the energy evoked by the stimulus is not exhausted in the initial contraction, but is gradually expended in a short series of automatic rhythmical contractions. Special interest will be taken in Bose's account of the mechanism concerned in the propulsion of the sap; but the whole book will be found to be a veritable romance of plant life.—*Brit. M. J.*, **2**: 54, July 13, 1929.

Abstracts from Current Literature

MEDICINE

Apparent Recurrences of Scarlet Fever. Kelleher, W. H., *Brit. M. J.* **1**: 987, June 1, 1929.

The text of this paper is the occurrence of scarlet fever for the fifth time in the same patient. She was admitted to hospital for each attack, and the diagnosis in each instance seems to have been clear, although the attacks were not all of equal severity. The rash and desquamation were the features common to each attack. Adenitis was definitely present only at the first admission: sore throat did not occur on the last two occasions. Fever is not mentioned as being constant; in the second attack it reached 102° F. but in the last two it was not more than 99° F.

Other possible causes of the rashes were ruled out, such as drugs or occupation. She had had measles, chicken-pox and whooping-cough. None of the other members of her family had ever suffered from scarlet fever.

The author comments on the difficulty that may attend the making of a definite diagnosis of scarlet fever. Even the Dick test and Schultz-Charlton fading reaction have not cleared the way entirely. All attendant features of scarlet fever must be taken into account, especially the presence of complications such as albuminuria, adenitis, arthritis, otitis media, and a study of the appearance, order and nature of the desquamation. Even the latter, however, must be qualified by remembering that some scarlatiniform erythemata produce skin changes which are indistinguishable from those of scarlatinal peeling. In the latter the desquamation usually begins later and does not last so long as in the other.

There is a good deal of disagreement amongst various observers as to the possibility of repeated scarlatinal attacks. Goodall is quoted as saying that he has never seen more than two attacks in one person and doubt the occurrence of three or four attacks. Caiger has personally observed three genuine attacks. Everard cites an instance of five attacks, but the first illness was complicated with chicken-pox and measles and the third and fourth by rheumatism.

H. E. MACDERMOT

The Development of Pulmonary Tuberculosis. Morlock, H. V., *The Lancet* **2**: 60, July 13, 1929.

Nine cases of a group of fifty are presented in support of the newer views of many continental writers that the onset of pulmonary tuberculosis is a sudden rather than a gradual occurrence. (These views are given in detail in a paper by Rist in this *Journal* for August, 1929.) The term "early infiltration" is applied to a group of symptoms and signs which are said to be characteristic but often not recognized at this stage of the disease. Observations are made during or after an acute illness often diagnosed as "influenza" and there is detected a widespread area of infiltration, not at the extreme apex, but more prone to occur in the infraclavicular, or middle, or even basal zones. The onset is definite, acute, and not severe. The signs may be crepitations only; the roentgenological picture is well-defined, showing the infiltrated area; the general condition of the patient is good and like that of early or incipient tuberculosis. The general condition and the x-ray findings differentiate this from acute broncho-pneumonic phthisis. The disease may from this point progress to involve the apex and adjacent regions and then assume the picture of chronic phthisis, or the whole process may subside with scar formation over a period of a few months. The writer feels that this is a frequent and much neglected type of onset of pulmonary tuberculosis and that many more cases will be recorded if the clinical consciousness of observers is aroused to the phenomenon.

J. B. ROSS

Liver Therapy in Secondary Anæmia. Dyke, S. C., *The Lancet* **1**: 1192, June 8, 1929.

In consideration of the fact that the experimental work which led to the discovery of the

remarkable and irrefutable effect of liver on primary anæmia was carried out on animals rendered anæmic by bleeding, it is reasonable to expect that some definite response should be shown by clinical cases of secondary anæmia. The red cell count and hæmoglobin percentage may not be a sufficiently accurate means of estimating this improvement and the writer uses the "reticulocyte response" which has proved to be so constant a finding in pernicious anæmia under liver therapy. In a small series it was found that certain cases of secondary anæmia showed a reticulocyte rise with a marked improvement in blood regeneration, that the response was greatly augmented by the simultaneous exhibition of large doses of iron, and that the cases which seemed to give the best results under this combination were those of failure of new blood formation after hæmorrhage. The reticulocyte response is taken to be an accurate gauge of the effect of treatment, when used in conjunction with the ordinary methods of blood examination.

J. B. ROSS

The Fate of Patients with Pleurisy. "Annotations", *The Lancet* **1**: 1208, June 8, 1929.

Appreciating the tuberculous nature of most cases of "idiopathic" pleurisy, it must also be appreciated that the prescribing of a month's holiday, with vague directions as to rest and exercise, is inadequate. Recent statistics published by Swedish and Norwegian authorities show that from 22.4 per cent to 50 per cent of their pleurisy patients subsequently developed active pulmonary tuberculosis with a high mortality rate. In the *Norsk Magazin for Laegevidenskapen,* April, 1929, Dr. L. B. Smith shows how the expectation of tuberculosis in this class can be reduced by a careful regime. If possible the patient is admitted to the sanatorium, but, if this is not possible, definite instructions accompany him to his home. He must rest lying down, for five or six hours daily; he must do no work of any kind for three or four months,—until the sedimentation rate of the erythrocytes becomes normal. In 90 cases so treated over a period of eight years, the incidence of pulmonary tuberculosis was only 10 per cent as compared with the above percentages. The series is admittedly small, but it "emphatically indicates the profit accruing to a patient from the interpretation by his medical advisor of 'idiopathic' pleurisy as a condition requiring rigorous treatment and supervision for a long time."

J. B. ROSS

The Clinical Classification of Congenital Cardiac Disease. Abbott, M. E., *The Lancet* **217**: 164, July 27, 1929.

This article is abridged from an address delivered by Dr. Maude Abbott, of Montreal, at the New Sussex Hospital, Brighton, on July 20, 1929.

Dr. Abbott remarks that clinicians do not always recognize the fact that congenital cardiac disease does not invariably mean morbus coeruleus ("Blue baby"), with its familiar symptom-complex of cyanosis, dyspnœa, clubbing, and its progressively downward course. Nothing can be done in these cases, of course. There is, in addition, she points out, a larger and, clinically speaking, a much more important group of cases of congenital cardiac disease, to which the term "acyanotic" applies. Here, if cyanosis ever does manifest itself it is a late phenomenon. In this latter group are included those cases only in which there is no abnormal communication between the two circulations, so that venous blood does not enter the arterial stream as a result of the anomaly.

A congenital cardiac anomaly of the acyanotic type can usually be "picked up" by detecting in an otherwise apparently normal individual a pulsation murmur or thrill of unusual localization and character in the cardiac area. Incidentally, these patients often display the slender build characteristic of aortic hypoplasia, a condition often associated with the congenital cardiac affection. A classification is given, to facilitate the clinical recognition of the two groups.

A. G. NICHOLLS

Insulin in Acromegalic Diabetes. Ulrich, H., *Arch. Int. Med.* **43**: 785, June 1929.

It is a matter of much importance, not only on the clinical side but also in connection with the mechanism governing the development of pancreatic diabetes to know how non-pancreatic types of diabetes behave under the exhibition of insulin. The majority of those who have investigated this matter, among them John, Hetzel, Sachs and MacDonald, Blum and Schwab, Tater, and Cowell, hold that in one form of non-pancreatic diabetes, namely, the acromegalic, insulin is just as effective as in the pancreatic variety. Ulrich takes exception to the work of these observers, and in the present article combats their views, stating that, in his opinion, insulin is less efficient in cases of acromegalic diabetes than it is in diabetes occurring without acromegaly.

Ulrich analyses critically the various papers he refers to, with the idea of showing that the various authors' interpretations are not justified on the evidence they submit. He refers to

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a case of his own of hyperpituitary disease in which the efficacy of insulin was impaired to a marked degree. The patient in question had had two attacks of glycosuria and hyperglycæmia. At autopsy he was found to have had a large pituitary adenoma. Ulrich also quotes a case of Nychler and Pasterny's in which the patient, suffering from a proved pituitary tumour, did not react to 60 units of insulin, so far, at least, as the hyperglycæmia was concerned.

Ulrich believes that the evidence at hand is sufficiently convincing to warrant the use of insulin for diagnostic purposes in cases of glycosuria that are suspected of having a pituitary basis. A demonstrable failure of insulin to produce its usual and expected results should be regarded as a link in the chain of evidence leading to a diagnosis of hyperpituitary disease.

A. G. NICHOLLS

Un nouveau signe de Sclérose aortique. (A new sign of aortic sclerosis). Trunecek, C., *Bruxelles Médical* **8**: 768, 1928.

The diagnosis of sclerosis of the aorta is based upon the demonstration, either by percussion or by the use of the x-ray, of dilatation of that vessel. The author of this paper brings forward a new sign. It consists in this. In cases of sclerosis affecting the arch of the aorta pulsation of the subclavian artery is perceptible in the subclavicular fossæ on both sides; in cases where sclerosis affects the descending portion of the aorta the pulsation is to be found on the right side only.

A. G. NICHOLLS

Dysinsulinism Convulsion and Coma Due to Islet Cell Tumour of the Pancreas, with Operation and Cure. Howland, G., Campbell, W. R., Maltby, E. J., Robinson, W. R., *J. Am. M. Ass.* **93**: 674, Aug. 31, 1929.

The authors report the following case.

A woman, aged 52, had been having indefinite attacks of semiconsciousness since 1922. These attacks gradually became more and more frequent and more severe. She was admitted to hospital in January, 1929. Dr. Ray Farquharson suggested that the convulsions and coma might be due to hypoglycæmia. The blood sugar during a typical attack measured 0.04 mgm. per 100 c.c., and prompt relief was obtained by the administration of dextrose intravenously.

The patient's course in the hospital was erratic. Her blood sugars were thoroughly studied; they followed no plan. When intravenous administration of 50 per cent dextrose was used to bring her out of a coma, it was very likely to be succeeded early by another attack of coma if sugar was not promptly given by the mouth. If however 100 grams of dextrose was given the blood sugar curve might be of the diabetic type.

A diagnosis was made of an islet cell tumour of the pancreas, inducing dysinsulinism.

At the operation, performed by Dr. Roscoe Graham, a tumour was enucleated from the body of the pancreas. No metastases were found. The pathologist's diagnosis was carcinoma originating from cells of the type of the islets of Langerhans. The tumour was found to contain insulin.

Recovery after the operation was uneventful. During the fourteen weeks following the operation there has never been any clinical evidence, subjective or objective, of the recurrence of the attacks in any form. They were encouraged to hope that spread of the tumour had not taken place.

LILLIAN A. CHASE

SURGERY

Subphrenic Abscess. Russell, T. H., *Ann. Surg.* **90**: 238, August, 1929.

A true subphrenic abscess is located between the dome of the liver and the diaphragm. Generally, a collection of pus between the diaphragm and the transverse mesocolon is taken as a subphrenic abscess. Nearly all cases occur on the right side. Subphrenic abscess may be subsequent to peritonitis, appendicitis, cholecystic disease, pneumonia, empyema, perforated duodenal or gastric ulcer, or trauma, respectively. Actinomycosis of the colon may be responsible. The organism most frequently found is the colon bacillus. Streptococcus, staphylococcus, pneumococcus, pyocyaneus, and, rarely, the Welch or tubercle bacillus, are also found. Infection may spread from a retrocæcal or normally placed appendix. Peristaltic action of the colon aids in carrying the infection up. Gas may be found in the abscess. It denotes the perforation of a hollow viscus, or the presence of a gas-producing infection, that is, b. ærogenes capsulatus or bacillus coli. The pus practically always has a foul odour. Subphrenic abscess may develop rapidly after an abdominal infection, or it may take a year or more.

Subphrenic abscess should be suspected when symptoms of disease appear in the lower chest or upper abdomen following abdominal disease. The patient is septic and has pain in the epigastrium, the right or left hypochondrium, or in the lumbar region, radiating to the upper thoracic vertebræ. Râles are present in the lower chest. The temperature is raised and is of septic type. Elevation usually occurs some time after the temperature from the primary condition has become normal. Leucocytosis is present. If the abscess is intraperitoneal paralysis of the diaphragm with depression of the liver is seen. Jaundice may develop. There

is usually rigidity and a sense of fullness on the affected side. Tenderness is frequently elicited. The use of an aspirating needle is dangerous and misleading. X-rays are of value in the diagnosis. Antero-posterior views in the sitting and prone positions should be taken.

An upper abdominal exploratory incision gives valuable information as to opening and draining the abscess. Routine resection of a rib for drainage is not advisable. Most cases can be drained at the lateral or posterior costal margin. Some cases may be drained intercostally. Definite evidence of pus in the posterior space is an indication for the latter type.

The published mortality rate varies from 20 to 50 per cent. Time is the vital factor. The earlier the active treatment, the better is the prognosis. A higher mortality rate is quoted in cases done through the transpleural as opposed to the trans-abdominal route.

R. V. B. SHIER

The Mortality of Intestinal Obstruction. Brill, S., *Ann. Surg.* **89**: 541, April 1929.

In 295 cases of acute intestinal obstruction, recorded between 1880 and 1889, the surgical mortality was 70 per cent. A similar series of 1,000 cases reported in 1900 showed a mortality of 43.2 per cent. This improvement is attributed to better technique, better asepsis, and earlier operation. A series of 1089 cases from 1900 to 1925 gave a mortality of 41.8 per cent. Thus no improvement is to be seen since 1900.

The author reports a series of 245 cases with a mortality of 36.3 per cent. An analysis of this mortality shows 19 per cent due to chronic type, 30.1 per cent to acute type, and 80 per cent to acute post-operative ileus. In the acute cases the best results were obtained in obstructed herniæ, the mortality being 11.2 per cent. The value of early operation is shown in this series. During the first 24 hours 12.5 per cent died; in the next 24 hours 61.1 per cent; and after 48 hours, 50 per cent.

Acute post-operative ileus includes paralytic ileus due to the paralyzing action of suppuration, and ileus due to angulation produced by adherent coils of bowel. In these cases mortality may be due to the toxæmia of obstruction or of peritonitis. The value of enterostomy is doubted; 15 of 19 patients who required it died.

Toxæmia of acute intestinal obstruction is not relieved by hypertonic saline unless the obstruction is a high simple one. In this type the chlorides fall rapidly, and the carbon dioxide combining power and non-protein-nitrogen rise. This does not occur in low obstruction. Unless the chlorides are known to be low isotonic saline is preferred to hypertonic. Larger quantities of isotonic saline may be given, thus aiding in overcoming the dehydration present.

The most important factor in the mortality of intestinal obstruction is delayed operation.

R. V. B. SHIER

PÆDIATRICS

Vitamin B Requirements in Infancy. Bloxsom, A. P., *Am. J. Dis. Child.* **37**: 1161, June 1929.

Brewer's yeast, for its vitamin B content, was given to 34 infants over a period of fifteen weeks. The four premature infants in the series showed a daily rate of gain in weight 79 per cent greater than that of premature infants not receiving yeast. The 30 full-term infants given brewer's yeast daily showed an average daily weight increment 100 per cent greater than those not receiving yeast. Most of the children were admitted because of malnutrition, upper respiratory infection, or need for regulation of feeding.

The control group in each instance is represented by a corresponding number of children admitted during the period preceding this study. No data are given for growth in length or growth of bone.

No ill-effects from the ingestion of brewer's yeast were noted. The author concludes that a substance rich in the growth-promoting factor of vitamin B should as a routine be added to the dietary from birth.

A. K. GEDDES

Dextrose Tolerance in Infants and Young Children. MacLean, A. B., and Sullivan, R. C., *Am. J. Dis. Child.* **37**: 1146, June 1929.

MacLean and Sullivan have determined the dextrose tolerance of 13 normal children from five weeks to two and a half years of age, and of 97 sick children from three months to five years of age. The normal blood sugar curve in children is flatter than in adults. The average blood sugar reading three to four hours after a light meal was 96 mgm. per 100 cubic centimetres; one hour after the ingestion of dextrose (1.75 grams per kilogram of body weight) the average reading was 128 mgm.; and two hours after it was 113 mgm. The average maximum increase in the blood sugar was therefore 32 mgm.

Marantic infants showed decreased tolerance; infants undernourished, but not marantic, gave normal curves. Decreased tolerance was observed in diabetes mellitus and tuberculous meningitis. A tendency to increased tolerance was seen in infants with tetany and also in infants with encephalitis. Body temperature appeared to have no effect upon the curve. In children with acute infections the curve showed nothing characteristic.

A. K. GEDDES

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Carbohydrate Tolerance in Infants and in Young Children with Cœliac Disease. MacLean, A. B., and Sullivan, R. C., *Am. J. Dis. Child.* **38**: 16, July 1929.

In a series of fourteen patients with cœliac disease repeated tests consistently showed an increased tolerance for dextrose. After a four hour fast, and in some instances a sixteen hour fast, 1.75 grams of dextrose per kilogram of expected body-weight for age was given and blood sugar readings were made at hourly intervals. When larger amounts of dextrose, galactose, dextrose and galactose combined, and fructose, were given, the blood sugar remained at the same low level. After a mixture of equal part of dextrose and fructose was ingested, readings similar to those of normal children were obtained. The authors suggest that this may indicate a more normal metabolism of invert sugar and explain the cœliac patient's tolerance for bananas. In two cases dextrose was given intravenously to eliminate the factor of absorption from the intestines. The resulting curves were somewhat flatter than those of the normal controls.

The urine studies from these patients rule out renal glycosuria as an explanation for the increased carbohydrate tolerance in cœliac disease. It must then be explained as due either to a lack of absorption of carbohydrate from the intestine or to an endocrine dyscrasia. The authors are inclined to favour the latter view.

A. K. GEDDES

The Incidence of Congenital Syphilis Among Dependent Children. Jenks, H. H., and Donnelly, J. D., *Am. J. Dis. Child.* **37**: 1198, June 1929.

Of one thousand dependent children, ranging in age from four months to sixteen years, most of them wards of child-caring institutions in Philadelphia, and 20 per cent of them negroes, definitely positive Wassermann reactions were found in 2.3 per cent. Three of these children had acquired syphilis, so that the incidence of congenital syphilis in the group was 2 per cent. Classified according to colour, the percentage occurrence in the negro children was 5.77 as compared with 1.39 in the whites.

In a group of 200 of these children chosen for special study, the percentage of illegitimacy was 52, but none of these illegitimate children gave a positive Wassermann reaction. In the entire group of one thousand children, 17 per cent were illegitimate and of these only one child showed any evidence of syphilis.

The authors compare their figures with the reports of other investigators.

A. K. GEDDES

OBSTETRICS AND GYNÆCOLOGY

Die physiologische Schwangerschaftshypertonie. (The Physiological Hypertonia of Pregnancy). Strassmann, E., *Arch. Gynäk.* **136**: 345, 1929.

This is an extensive examination of the subject conducted on 230 women during pregnancy and the puerperium. In the case of one-half the patients the blood pressure remained unaltered; among the other half the pressure was raised 20 mm. in 20 per cent, and 30 mm. in 6 per cent. At the end of pregnancy the pressure reached a height of 130 mm. in 30 per cent. Readings of 150 mm. were common, even when the urine was normal, After confinement the blood pressure drops considerably. The figure reached was 110 mm. in more than 80 per cent. The lowest point is usually reached from the fifth to the eighth day after delivery. In one to two months the pressure returns to normal.

Increased blood pressure during pregnancy is to be regarded as physiological and the expression of the increased physical and chemical metabolic processes incident to that state.

A. G. NICHOLLS

THERAPEUTICS

"Activated" (Irradiated) Fluorescein in the Treatment of Cancer. Copeland, S. M., Coke, F., and Gouldesbrough, C., *Brit. M. J.* **2**: 233, Aug. 10, 1929.

Two years ago, Dr. Copeman exhibited at the London meeting of the International Cancer Conference several cases of inoperable cancer in whom the evidences of their disease had disappeared as a result of the use of a soluble salt of fluorescein followed by the application of a comparatively small dosage of x-rays or radium. These results were so gratifying that it was determined to follow up the observations with more extended research.

It has been known for some years, as a result of studies by von Tappeiner and Raab, Noguchi, Salant and Bengis, Pereira, and others, that lowly organisms such as paramœcium, or embryonic cells, including spermatozoa and ova, when exposed to the action of daylight in the presence of a dilute solution of eosin or fluorescein are rapidly killed, whereas, if protected from light no such lethal effect is produced. However, eosin and its relative erythrosin are inapplicable from a clinical point of view, inasmuch as they are definitely toxic, especially when injected intravenously. Fluorescein, on the other hand, appears to be perfectly nontoxic.

The authors, after discussion with Prof. W. E. Dixon, of Cambridge University, have investigated the possibility of obtaining beneficial

results in the treatment of cancer by the use of sodium fluorescein or other fluorescent salts, irradiated by means of wave-lengths of more penetrating quality than that characteristic of the rays of ultra-violet light. When employing x-rays they used a mild dosage, averaging 6 Holzknecht units (three-quarters of a pastille dose) screened through 4 mm. of aluminium. For the most part they used the sodium salt of fluorescein, but also the potassium and strontium salts, both of which seem to be innocuous for man. A solution of 2 to 2.5 per cent of sodium fluorescein is the one preferred. In the case of superficially situated ulcerated growths the solution was painted on, and this was usually done on two or three occasions before irradiation. In certain cases of deep-seated cancer the sodium salt was given by the mouth an hour or two before the exposure to the x-rays, in doses of 30 grains or more. This internal medication has never given rise to any unpleasant symptom. Experiments on mice show that the dye is not taken up selectively by malignant cells. The authors state that they have reason to think that in the case of internal cancers more satisfactory results may be obtained through the intravenous exhibition of the drug.

During the past seventeen months 70 cases of malignant disease (for the most part termed "inoperable") have been treated by them by means of "activated" fluorescein. Analysis of the cases gives the following results:—

Apparent recovery	8
Much improved	20
Too recent for statement	7
No change	8
Not improved	2
Discontinued treatment	12
Dead	7
Prophylactic	6

With regard to cases treated similarly elsewhere, four successful results are reported from King's College Hospital, and two private cases also apparently recovered. The authors also refer to other work done at Whitop's Cross and Westminster Hospitals, where radium was substituted for x-ray, in which it is shown conclusively that fluorescein is able to augment the action of radium. This is encouraging.

The following points are offered in conclusion. (1) The cases which respond most satisfactorily are those in which other methods of treatment have not been tried. If patients have been subjected to courses of x-rays or radium, this will probable militate against obtaining useful results with fluorescein. (2) The more malignant the growth, the more likely it is to respond to treatment. (3) When fluorescein is given internally in cases of mammary cancer enlarged glands in the axilla have been known to disappear, although not themselves directly activated. (4) In the case of superficial secondary nodules the injection of a few drops of fluorescein solution into the substance of the nodules prior to irradiation has caused even considerable masses to disappear with unexpected rapidity. (5) Cases previously regarded as inoperable, after a course of treatment with activated fluorescein, have, in certain instances, been found, at a comparatively early stage, to have undergone such change as to render them amenable to surgical intervention, with satisfactory results.

A. G. NICHOLLS

PATHOLOGY

A New Index of Intestinal Putrefaction. Mutch, N., *Lancet* **1**: 1034, May 18, 1929.

The writer claims that the indicanuria test for intestinal putrefaction is too delicate for clinical use, in that very slight variations from normal digestion may result in indicanuria, such variations not rising to the level of an abnormality. The reason for this finding is that indican, being a tryptophane derivative, is liberated as a terminal product of ileal digestion and very minor disturbances prevent the few final steps being completed. Tyrosine, on the other hand, is liberated at a very early stage of digestion, and if intermediate products of tyrosine digestion appear in the urine, it can be assumed that a great part of protein digestion is abnormal. The most important of these products is an acid-p-hydroxyphenyl-acetic,—for which a test in the urine is outlined:—

> Take 50 c.c. urine; add 5 c.c. of 25 per cent sulphuric acid and 15 c.c. of ether, shake, remove 2 c.c. ether; evaporate over warm water. Add Millon's reagent drop by drop and boil. A positive reaction is indicated by a red colour. (Quantities approximate).

The eating of cheese within twenty-four hours prior to the test, or the taking of salicylates will cause a false colouration. Three factors are found to be of great importance in the production of a positive reaction—ileal stasis, *B. coli* infection of the ileum (as determined by cultures at operation), and gastric hypochlorhydria. A negative finding is of doubtful importance but a positive one is always significant. The incidence is about 50 per cent as high as a positive indican test.

J. B. ROSS

ANÆSTHESIA

The Thyroid Obsession. Morse, J. L., *Anæs. & Analgesia*, p. 256-258, July-August, 1929.

It has been stated that a child who has enlargement of the thymus gland should not be anæsthetized until the gland has been reduced to normal size, by treatment with the roentgen ray. The shadow of the thymus, as revealed by x-ray examination, varies according to the position of

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the child. It is larger in inspiration than expiration. It changes in size from day to day, possibly from hour to hour. Moreover, the shadow gives no indication of the thickness of the gland. There is no certainty as to what is the normal size of the thymus gland. Nor is it known whether increased size is associated with increased secretion. Children sometimes die suddenly from apparently trivial causes and are found post-mortem to have had status lymphaticus. On the other hand, sudden deaths also occur where this condition is not found. The question arises whether these deaths under anæsthesia were not due to faulty anæsthesia in operating. The writer thinks that it is unreasonable to say that a child before operation should have an x-ray examination to determine the size of the thymus and treatment if the gland appears to be enlarged.

W. B. HOWELL

Obituaries

Dr. A. E. Gardiner. The death of Dr. A. E. Gardiner, of McAdam Junction, N.B., occurred on August 21st. He was a graduate of Mount Allison and McGill Universities. Dr. Gardiner was at first located at Mace's Bay, but for the past twenty-one years had practised at McAdam. He served overseas during the war as medical officer of the 55th Battalion.

He is survived by his widow; one son, Arthur; and one daughter, Mrs. Roy Towle.

Dr. L. D. Mignault. We regret to have to announce the death on August 24, 1929, at his residence in Montreal, of Dr. Louis-Daniel Mignault, at the age of seventy-three. He had been ill for more than a year.

Dr. Mignault was born at Worcester, Mass., on June 3, 1856, and was educated at St. Mary's College, Montreal, and at McGill University, where he received his doctorate in Medicine in 1881. He was at one time a professor in Victoria University, and later at the University of Montreal. In the latter institution he held the Chair of Anatomy from its foundation until about one year ago. Dr. Mignault was a Knight Commander of the Order of St. Gregory the Great.

He is survived by his widow, one son, and three daughters. He was a brother of the Honourable Mr. Justice P. B. Mignault.

Dr. John J. Gardner, of Montreal, died at the Montreal General Hospital on August 31, 1929. He was a well known eye specialist and one of the oldest practitioners in the city. He graduated in medicine at McGill University in 1883, and was on its teaching staff, as Lecturer in Ophthalmology, from 1897 to 1903. He was also for some years attached to the Montreal General Hospital, as oculist and aurist, and was Consulting Ophthalmologist to that institution at the time of his death. Dr. Gardner was a brother of the late Dr. William Gardner, in his lifetime a widely known and highly esteemed gynæcologist, who also held the Chair of Gynæcology at McGill University.

Dr. Gardner is survived by his widow and several sisters.

Dr. Donat Handfield, of Montreal, died suddenly on September 9, 1929, at his residence, 1405 Dufresne Street, in his 44th year. Dr. Handfield studied at Ottawa University, finishing his medical course in the University of Montreal in 1907. He also studied in Europe and under Dr. Chrétien-Zaugg of Montreal.

Dr. L. A. Bernard died at his residence, 1284 Maisonneuve Street, Montreal, on August 14th.

Dr. R. E. Guy Smith of Westmount, Que., died on September 16, 1929, in his sixty-second year. He was a graduate in Medicine of McGill University of the year 1896. Dr. Smith was a native of Woodstock, N.B. He never practised his profession, but devoted himself to finance and works of philanthropy. Dr. Smith is survived by his widow, two sons, and three daughters.

TOBACCO SMOKING.—In a series of 150 adult smokers reported on by Wingate M. Johnson, the systolic blood pressure was 128.23, the diastolic 78.87. In the same number of non-smokers, the average systolic pressure was 129.64, the diastolic 79.23. The average age was practically the same, 42.63 years for the smokers, 42.41 for the non-smokers. The weight of the smokers was 164.44, of the non-smokers 161.08. The height was the same. Of sixty fatal cases of angina pectoris in males, 42, or 70 per cent, were in smokers; eighteen, or 30 per cent, in non-smokers. As a control, of 1,000 adult males taken from telephone directories in five cities, 81.8 per cent were smokers. In a series of twenty individuals tested, the blood pressure after smoking showed no change in five but dropped in fifteen. The average fall in blood pressure after smoking for the whole group was 4.9 systolic, 3.4 diastolic. Johnson concludes from these data that tobacco smoking apparently has no permanent effect on the blood pressure. There is no foundation for the popular belief that smoking decreases the weight of an individual. It is doubtful whether tobacco plays a major part in the etiology of angina pectoris. The act of smoking, if it affects blood pressure at all, reduces it temporarily. The effect of tobacco smoking is chiefly local, exerted principally on the pharynx.—*J. Am. M. Ass.* **93:** Aug. 31, 1929.

News Items

GREAT BRITAIN

The Radium Situation

Last April the Radium Sub-Committee of the Committee of Civil Research issued its report on radium in the treatment of cancer, and the Government thereupon promised to make a grant of £1 for every £1 subscribed by the public for the purchase of a national stock of radium up to a limit of £100,000. At the end of that month the Presidents of the Royal Colleges of Physicians and Surgeons and other distinguished members of the medical profession addressed to *The Times* an appeal for £150,000, to be the public contribution to the National Radium Fund.

It was agreed, in order to avoid competing appeals, that this public contribution should form part of the Thank-offering Fund for the King's Convalescence, and that close co-operation should be maintained between the National Radium Fund and King Edward's Hospital Fund for London, the sponsors of the Thank-offering Fund.

The Times opened a National Radium Fund the next day and within a week the sum of money required had been subscribed, the King and Queen, the Prince of Wales, and other members of the Royal Family being early contributors. The National Radium Fund stands to-day at more than £187,000.

Two bodies had been designated by the Sub-Committee of the Committee of Civil Research to deal with the Fund—the National Radium Trust and the National Radium Commission. The duty of the Trust is to hold the Fund and to purchase therewith and hold radium for use by the Commission. The Commission's duty is "to deal with the custody, distribution, and use of all radium held by the trustees, having regard to the advancement of knowledge, the treatment of the sick, and economy of use, and, in particular, to consider and approve plans submitted to them for the use of radium for the purpose of medical treatment and research and to make the necessary arrangements for the supply of radium for such uses." The Trust, as now constituted, has the confidence alike of the Government and of the medical profession. The Commission is so constituted as to contain an effective majority of members representing the skilled and experienced workers on the staffs of the voluntary hospitals.

The National Radium Trust is constituted as follows:—

The Right Hon. Lord Parmoor, K.C.V.O., K.C., Lord President of the Council (Chairman); the Right Hon. Arthur Greenwood, M.P., Minister of Health; the Right Hon. W. Adamson, M.P., Secretary of State for Scotland; Sir Ernest Rutherford, O.M., President of the Royal Society; Sir John Rose Bradford, K.C.M.G., M.D., President of the Royal College of Physicians; The Right Hon. Lord Moynihan of Leeds, K.C.M.G., C.B., President of the Royal College of Surgeons; the Right Hon. Lord Dawson of Penn, G.C.V.O., K.C.B., K.C.M.G., M.D., F.R.C.P., President of the Royal Society of Medicine; the Hon. Lord Mackenzie, LL.D., Chairman of the Central Liaison Committee for Voluntary Hospitals in Scotland; Professor A. H. Burgess, M.B., B.Sc., F.R.C.S., President of the British Medical Association; and the Right Hon. Viscount Lee of Fareham, P.C., G.C.B., G.C.S.I., G.B.E.

THE COMMISSION

The Radium Commission has now been set up in accordance with the provisions of the Royal Charter, and is composed as follows:—

Chairman: The Right Hon. the Viscount Lee of Fareham, P.C., G.C.B., G.C.S.I., G.B.E. (appointed by the National Radium Trust); Lieutenant-Colonel Smallman, C.B.E., D.S.O., M.D., Medical Officer of the Ministry of Health (appointed by the Minister of Health); H. L. F. Fraser, Esp., LL.B., Assistant Secretary of the Department of Health for Scotland (appointed by the Secretary of State for Scotland); Professor Sidney Russ, D.Sc., Professor of Physics, Middlesex Hospital Medical School (appointed by the Medical Research Council); G. W. C. Kaye, Esq., O.B.E., D.Sc., Superintendent of the Physics Department of the National Physical Laboratory (appointed by the Department of Scientific and Industrial Research).

And the following members appointed by the Trust from the panel of 12 persons selected by the heads of the medical profession under Article 4 (2) of the Charter, as "having special knowledge and experience of the application of radium in the treatment of the sick":—

J. M. W. Morison, Esq., M.D.Glas., F.R.C.P.Ed., Lecturer in Radiology, University of Edinburgh; Professor G. E. Gask, C.M.G., D.S.O., F.R.C.S., Professor of Surgery, University of London; W. Ernest Miles, Esq., F.R.C.S., Surgeon to the Cancer Hospital, Brompton; Comyns Berkeley, Esq., M.D., F.R.C.P., F.R.C.S., Gynæcological Surgeon to the Middlesex Hospital; Carlton Oldfield, Esq., M.D., F.R.C.P., F.R.C.S., Professor of Gynæcology, University of Leeds; and Professor A. J. Hall, M.D., F.R.C.P., Professor of Medicine, University of Sheffield.

The New Vaccination Order

The Ministry of Health has issued this week to boards of guardians a circular, No. 1025*a*, with reference to a new Order (Statutory Rules and Orders, 1929, No. 640) which the Minister has made under the Vaccination Acts. The purpose of the Order, which will come into force on October 1st, is to give effect to the first four recommendations printed at page 201 of the report of the Committee on Vaccination presided over by Sir Humphry Rolleston. The recommendations dealt with in the new Vaccination Order are as follows:

(1) In place of the officially advocated four insertions, trial should be made of vaccination and revaccination in one insertion with a minimum of trauma, and that multiple scarification and (or) cross-hatching be deprecated.

(2) Primary vaccination should be performed in infancy, between the ages of 2 and 6 months as at present, and revaccination be offered at the time when a child enters school (6 to 7 years), and again on leaving (14 to 16 years).

(3) Vaccination in multiple insertions should be available for such persons as desire to obtain the maximum protection against smallpox obtainable at one operation.

(4) In public vaccination parents should be informed that if, in consequence of vaccination, a child requires medical attention, it is the duty of the public vaccinator concerned to provide such attention without cost to the parents.

In the new Order effect is given to recommendations (1) and (3) by altering the present instructions to public vaccinators and the forms of vaccination contract. In future a public vaccinator should vaccinate or revaccinate in one insertion only, unless it is desired to

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obtain additional protection against small-pox at one operation, when the number of insertions may be increased up to four. The aim should be to obtain successful vaccination with the minimum of injury to the tissues, and in no circumstances must the vaccinated areas be cross-scarified or cross-hatched. In compliance with recommendation (4) changes are made in the Form of Notice of the requirement of vaccination given by registrars of births and deaths, in order that parents or guardians may be informed that, if vaccination is performed by a public vaccinator, it will be his duty to attend and prescribe such treatment as is necessary without charge to the parent or guardian, if in his opinion the child needs medical treatment in consequence of the vaccination. A new paragraph has also been added to the Form giving effect to recommendation (2), and authority is given to a public vaccinator to revaccinate any person who applies to him without reference to the period which has elapsed since the last vaccination.

The circular draws attention to the remarks of the Rolleston Committee on the occurrence of cases of "post-vaccinal nervous disease." The committee pointed out that, however seldom such cases might occur, they were of serious import, and could not fail to have an effect on vaccination both in its administrative and in its purely medical aspects. But the report also pointed to the extreme rarity of such manifestations, particularly after revaccination and after primary vaccination in early infancy, and the committee concluded that early infancy remains the time of choice for primary vaccination. The Minister recognizes that "post-vaccinal nervous disease", both in this country and abroad, has occurred mainly in children of school age or adolescents who had never previously been vaccinated, and that this fact emphasizes the desirability of securing the successful vaccination of infants. Where this has not been attained, the question which arises is whether it is advisable to vaccinate children of school age or adolescents. The Minister is of the opinion that, in the present state of knowledge, and so long as the small-pox prevalent in this country retains its present mild character, it is not generally expedient to press for the vaccination of persons of these ages who have not previously been vaccinated, unless they have been in personal contact with a case of small-pox or directly exposed to small-pox infection.

Medical Research Council

By an Order of the Committee of Privy Council, Lord D'Abernon and Mr. A. G. Church, M.P., are appointed members of the Medical Research Council, on the retirement of Lord Balfour and of Sir Charles Trevelyan, M.P. Lord D'Abernon will succeed Lord Balfour as Chairman of the Council.

By another Order, made after consultation with the Medical Research Council and with the President of the Royal Society, Professor J. J. R. Macleod (Regius Professor of Physiology in the University of Aberdeen) and Mr. Wilfred Trotter (Honorary Surgeon to the King, and Surgeon to University College Hospital, London) are appointed members of the Council, in succession to Professor E. P. Cathcart and Sir Charles Sherrington, who will retire in rotation on September 30.

The Primary F.R.C.S. Examination in Canada

Much interest has been evinced, in England and Canada, and the United States, in the fact that for the first time in history the primary examination for the diploma of F.R.C.S. has been held outside of Britain. The *Journal* gave an account of the matter, editorially, last month. *The Lancet* has this to say in a recent issue. "The Canadian Medical Association was responsible for the arrangements, and much of the success of this new departure was due to Dr. Alexander Primrose, dean of the Medical Faculty of the University of Toronto, and Dr. T. C. Routley, general secretary of the Canadian Medical Association, who took an active part in bringing about this attempt to offer to Canadian medical practitioners greater facilities for obtaining the F.R.C.S.Eng. There is a strong desire in Canada for closer association between the medical profession in the Dominion and in this country, and much interest has been taken in Canada and the United States in the undertaking. The examiners were received by the Governor-General at Quebec and by the Prime Minister at Ottawa, who expressed sympathetic interest in their mission. The Final Examinations for the Fellowship will be conducted only in England, but the opportunity of passing the primary examination in Canada should make two visits to this country unnecessary, and so, it is hoped, bring the F.R.C.S.Eng. within the reach of a larger number of Canadians than has hitherto been the case."

Health at the Jamboree

The organization of the Boy Scouts' World Jamboree at Arrowe Park, Birkenhead, nowhere showed to better advantage than in the medical department. The hospital, which was in charge of the Medical Commissioner, Lieut.-Colonel J. C. Holdich Leicester, consisted of nine marquees and six bell tents. Four of the marquees were wards, each holding sixteen beds. Another was divided into two parts, one-third of its space being used as a dispensary and the rest as an emergency operating theatre. A sixth marquee, similarly divided, served as a dental clinic and an out-patient department. The remaining three were used respectively as an office, a store, and a dining tent for the staff. One of the bell tents was a store-room for patients' clothing and the other five were isolation wards. A small portable plant supplied the hospital with electric light, and all the units were linked by telephone. Cooking was all done out-of-doors under a corrugated iron roof. The Cheshire Girl Guides Association supplied the entire nursing and executive staff, whilst Colonel Leicester was assisted in his medical work by three local practitioners and a number of local honorary consultants. The dental clinic was under the supervision of Mr. H. H. Tomlinson, who was assisted by a staff of six dentists.

More than 30,000 scouts attended the camp, and it is surprising that in the three weeks only 321 had to be admitted to hospital. Of these, 52 were evacuated to local hospitals as being likely to need attention for more than a few days; this figure included nine cases of infectious disease sent to Birkenhead Fever Hospital. All the rest returned to their units relieved or cured. Tonsillitis accounted for 70 cases, and the next commonest types of ailment for which admission was necessary were cuts, stings, or bruises (39 cases). These were followed closely by chills, malaria, and malaise (28 cases), and pyrexia (26 cases). There were 21 fractures and dislocations, 14 sprains, 15 cases of constipation and colic, and 14 of other stomach troubles. Considering the mud and damp in which the camp has lived, the proportion of respiratory disorders was low; there were 11 cases of asthma, bronchitis, and catarrh; 8 of "influenza"; and 7 of pneumonia and pleurisy. Coughs and colds might have been expected to number more than 80, while rheumatism accounted for only 3 admissions. Twenty operations were performed for the reduction of fractures and repair of other injuries. The out-patients' department was attended by 1,229 boys, 271 of whom had cuts and wounds (68 septic), and 125 had boils. Scalds, burns, sunburns, and abrasions accounted for 108 more. Naturally the greatest number of in-patients were English: 160. The French followed with 47; and the Scottish 12, Welsh 12, Irish 11, and American 9, came next. A really remarkable absence of epidemic disease and of serious illness in such a large concourse

was very largely due to efficient hygienic precautions taken by the Assistant Camp Chief (Health), Major M. B. Ritchie, ably seconded by the Hygiene Commissioner, Dr. Richard Wyse. The stagnant pools in the woodland areas were freed from infestation and the water supply was carefully planned . The latrines were adequate in number and suitably placed, and an expert staff saw to their emptying and cleansing. The camp was patrolled by members of the St. John Ambulance Brigade and the British Red Cross Society, and whenever possible the boys were medically examined before coming to camp. There was a first-aid post under medical supervision at the rest camp organized at Earl's Court for scouts who wished to stay in London before or after the Jamboree. Here, again, local hospitals co-operated cordially. The organizers and medical staff are to be congratulated on the success of their work, which may well form a model for future encampments of the same kind.—*Lancet* **2:** 396, Aug. 24, 1929.

In the same issue of *The Lancet* (p. 410) Major M. B. H. Ritchie writes as follows: "I think that the profession in general would like to know about the important part which many of its members played in the World Jamboree at Birkenhead. From home or overseas, some 70 doctors were in camp. They represented almost every branch of the profession—consultants, practitioners, medical officers of health, the services, teaching staffs, research, specialists, and students. Many are high in the Scout movement, many are actively associated in furthering its aims; some not desiring a "busman's holiday" were to be found in important non-medical appointments at the Jamboree, and were always ready to give their professional services when required; while others, non-Scouters, stood in to lend a hand in hospital or aid-post out of sheer goodness of heart. Years did not signify; among all, there was joy in their actions and the spirit of youth on their faces. It is delightfully refreshing to see eminent medical men in the boyish and rational dress of shirts and shorts. Medical necks and medical knees take on a fine shade of tan. And the spirit of comradeship and friendliness that sprang up was perfectly splendid. A medical Scouters' dinner was held, at which almost 50 were present. The Chief Scout received the members of the health organization (hygiene and medical staffs) on the last day of the Jamboree and expressed his great appreciation of the work they had done for Scouting.

It is fine to see so many members of our profession imbued with the spirit of scouting. For myself, it was a unique privilege to observe how magnificently they carry into practice the Scout doctrine of service to others. I am, Sir, your faithfully,

M. B. H. RITCHIE,

Major, Royal Army Medical Corps; Assisant Jamboree Camp Chief (Health), World Jamboree, 1929.
Military Hospital, Colchester, August 19, 1929.

King Fuad at the Royal College of Surgeons

The King of Egypt paid a visit, on August 1st, to the Royal College of Surgeons of England, and was made an Honorary Fellow of the College. Lord Moynihan, the President, on presenting the diploma to King Fuad, referred to the close connection of the Royal College of Surgeons with the Egyptian School of Medicine. Fellows and members of the College had been teachers in the School, and until recently the post of dean had been held by an English Fellow of the College. Dr. Aly Ibrahim, the present dean, had recently been made an Honorary Fellow, and within recent years nine Egyptians, trained in the School at Cairo, had become F.R.C.S.Eng. by examination. The President also referred to the great personal interest His Majesty took in the faculty of medicine at Cairo and the Kasr-el-Aini Hospital, for the new building of which he lately laid the foundation stone. King Fuad, having signed the Roll of Honorary Fellows, inspected the museum and other parts of the building.

In Honour of Dr. W. W. Mayo

A window in the Eccles Parish Church of Manchester was dedicated on July 25th last to the memory of the late Dr. William W. Mayo, the father of Drs. Charles and W. J. Mayo, who was a Manchester man.

The Rhythms of Life

Professor D. F. Fraser-Harris, formerly Professor of Physiology at Dalhousie University, and well known to Canadians, has just brought out a book of essays entitled "The Rhythms of Life" (pp. 185; 5s.; London, George Routledge and Sons Ltd., 1929). In this little book are brought together various contributions that have at various times appeared in well known magazines and newspapers. Prof. Fraser-Harris' desire, clearly, has been to popularize useful scientific topics, and his easy, clear, and elegant style is a most excellent medium for the purpose. Among the subjects dealt with are: The Rhythms of Life, the first essay, which gives the title to the book; The Eye as a Camera; The comparative Sensitiveness of the Sexes; The Analysis of Taste; Our Debt to the Microscope; and The Causes of Colour.

The volume is interesting and deals simply, yet scientifically, with some of the fundamental principles arising out of physics, chemistry, and physiology. The book, therefore, has a real place among scientific works of an educative character.

NOVA SCOTIA

An energetic campaign is being carried on to obtain funds for a new hospital for the town of Digby.

Some months ago the Westwood Hospital, a private undertaking of Dr. C. E. A. DeWitt's, Wolfville, was taken over on lease by the Eastern Kings Hospital Committee, to be thenceforth conducted as a public institution under the name of the Westwood General Hospital. The Committee is now engaged in an effort to secure funds for a substantial enlargement of the hospital, and tenders have been called for the construction work. In Kentville, also, the provision of a general hospital in the near future seems to be assured. Several years ago, the erection of a hospital at Berwick met the needs of the western part of Kings County, and the indications are that the eastern and central sections of the county will soon be well supplied with hospital accommodation.

The Committee appointed by the Medical Society of Nova Scotia to submit recommendations to the government of the province in respect of the proposed reorganization of the Department of Public Health has already come to some definite decisions. The government is asked that the Provincial Health Officer be given the status of Deputy Minister of Health, and

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that all health activities be centred in the one department. Consideration of the employment of full-time health officers has been deferred. The participation of lay organizations in health work is approved, and the hope is expressed that their activities will be continued under the supervision of the Deputy Minister. The several branches of the Society are asked for opinions relative to the best method of providing additional bed accommodation for tuberculous patients.

A quinquennial reunion of old Dalhousians was held at the University on the 28th, 29th, and 30th of August, and attracted a large number of former students of the medical faculty. Notable among these were Doctors John Stewart, of Halifax, Finlay MacMillan, of Sheet Harbour, and Robinson Cox, of Upper Stewiacke, who were classmates sixty-six years ago, and have ever since been warm friends. Dr. MacMillan is the oldest living graduate of the Dalhousie Medical School.

The Saint Rita Hospital, at Sydney is to be opened some time during the month of September. To what was formerly known as the Ross Memorial Hospital a substantial addition has been made, and the institution has been named anew. Accommodation is provided for fifty patients. Furnishings and equipment are of the most modern type. The hospital is in charge of the Sisterhood of St. Martha, which was organized at Antigonish several years ago in connection with the housekeeping of St. Francis Xavier University, and later extended its activities to include hospital administration. Several hospitals are now being administered with conspicuous success by this Order.

The Nova Scotia Registered Nurses Association held its annual meeting at Sydney on the 23rd and 24th of August. The nurses were officially welcomed to Sydney by Dr. John K. McLeod, City Health Officer, who was deputed to represent the Mayor. The program of entertainment permitted the nurses to visit the hospitals of several towns in the proximity of Sydney.

The refresher course for physicians arranged by the Faculty of Medicine of Dalhousie University, held during the last week of August, proved very successful and was largely attended. The mornings were devoted to clinics by members of the Dalhousie faculty at the Victoria General, Camp Hill, Children's, and Maternity Hospitals and the Dalhousie Clinic. In the afternoons of the first two days, lectures by Doctors Colin Sutherland and W. G. Penfield, of McGill, were greatly enjoyed and thoroughly appreciated. The remaining afternoons were left free for participation in the events of the Dalhousie quinquennial reunion. For the assistance of Drs. Sutherland and Penfield the Refresher Course Committee is under obligation to the Canadian Medical Association, which made their presence possible.

The Nova Scotia Hospital Association met at New Glasgow on the 21st and 22nd of August. Medical men who took part in the proceedings were Drs. Harvey Agnew, of Toronto, and J. G. MacDougall, S. L. Walker, and Joseph Hayes, of Halifax. Dr. Agnew dealt particularly with fire prevention in hospitals. Dr. MacDougall spoke on the relationship of the medical staff to the hospital. Dr. Walker endorsed a proposal that a small monthly magazine be published by the Association. Dr. Hayes discussed the provision of accommodation for tuberculous patients in general hospitals. Among the resolutions passed was one requesting the removal of customs duty on equipment, not made in Canada, which is used only in hospitals. Mayor Fillmore, of Amherst, was elected to the presidency for the ensuing year, while Rev. L. McLellan, of Antigonish, was made Secretary. The Association is to meet next year at Sydney.

It is expected that Dr. James MacFarlane, of Toronto, will address the Cape Breton and the Eastern Counties branches of the Medical Society of Nova Scotia about the middle of September, and that Dr. John Fraser, of Montreal, and Dr. S. R. Johnston, of Halifax, will speak at Amherst, New Glasgow, Truro, Bridgewater, Yarmouth, and Kentville, some time in October. These lectures are being arranged in connection with the scheme for extra-mural post-graduate teaching of the Canadian Medical Association.

Early in September, Drs. K. A. MacKenzie and G. H. Murphy left Halifax to join a Canadian Medical Association "team" for a lecturing tour through the western provinces.

Major J. A. Murray, R.C.A.M.C., was tendered a farewell banquet at the City Club, August 22nd, by the officers of No. 22 Field Ambulance, on the eve of his departure from Halifax for Victoria, whither he has been transferred.

Dr. John A. Ferrell, of the International Health Division, Rockefeller Foundation, was a visitor to Nova Scotia in August. Accompanied by Dr. George A. MacIntosh, Provincial Health Officer, he motored through the eastern part of the province, making a study of the sanitary condition of several of the mining towns.

W. H. HATTIE

NEW BRUNSWICK

During the last month two operative tonsil clinics were held under the Department of Health, Medical School Inspection Branch. The first was at Havelock, N.B., on August 16th, the second at Florenceville, N.B., on August 20th. At both these clinics, Dr. L. DeV. Chipman, of Saint John, was in charge. He was assisted by Dr. Robert Hayes in both instances. At Havelock, other medical assistants included Dr. Rommell and Dr. C. A. King. At Florenceville Dr. Chestnut, of Hartland assisted.

The Campbellton Soldiers' Memorial Hospital is engaged at present in a campaign to raise $25,000 to provide for necessary expansion.

The Saint John Medical Society was privileged in August to hear an address by Dr. W. G. Penfield, of Montreal. Dr. Penfield discussed "Methods of Diagnosis in cerebral lesions". His address was remarkable for its simplicity and for the ease with which his hearers were able to follow a subject beset with marked difficulty. The discussion of the paper by listeners provided further interest and it is felt that with a single speaker the subject can be more carefully elaborated. The time allowed for discussion is obviously greater. The attendance at this meeting was large, and it is felt that its exceptional success was due to the fact that but a single topic was discussed.

Dr. Penfield's kindness in breaking his trip to Halifax is very much appreciated by the local society. We feel sorry that it was impossible for him to speak at other centres in the province.

Dr. K. A. Baird has established a practice in West St. John.

Dr. W. F. Roberts, of Saint John, is at present in Ontario as a representative of the local Kiwanis Club.

At the last meeting of the Saint John Medical Society, a group of standing orders for the Victorian Order of Nurses was approved. The work of the Victorian Order is becoming increasingly valuable in this province and not a little of this increased value is due to the fine spirit of co-operation evidenced by the heads of this valuable nursing service.

Dr. Harold Gardiner, lately of the interne staff of the General Public Hospital, is now in practice at Sackville, N.B.

Dr. John M. Barry, Saint John, spent his holidays this year at his old home in Melrose, N.B.

Dr. W. E. Rowley, Saint John, is at present confined to his home by illness. A. STANLEY KIRKLAND

QUEBEC

As in past years the medical staff of the St. Vincent de Paul Hospital, Sherbrooke, held a "Clinical Day" on September 12th. The meeting was held under the auspices of the Committee on Refresher Courses of the Medical Association of the Province of Quebec. The program was arranged under the direction of the local secretary, Dr. R. Duberger. Four conferences were held. The first was conducted by Prof. A. LeSage, of the Notre Dame Hospital, Montreal, who took for his subject "Arterial hypertension;" the second by Dr. H. L. McKim, of the Montreal General Hospital, who spoke on "Infection of the hands;" the third by Prof. P. Z. Rhéaume, of the Hôtel-Dieu, Montreal, who dealt with "Gastrotomy and its indications." In the evening a dinner with a "round table" discussion was held at the Magog Hotel, at which Dr. Rosario Fontaine, of the Coroner's Court and the Department of Legal Medicine of the Province, discussed some medico-legal problems.

Plans were submitted at the annual meeting of the Chateauguay Board of Management of the Julius Richardson Convalescent Hospital, Chateauguay Basin, for the construction of a new wing, which would provide sufficient quarters for the hospital staff and also add to the accommodation. The Treasurer's report for the year was also read and adopted and showed a balance on hand of about $3,000. The matron's report for the year showed that about 500 children had been given convalescent care during the past year and that no deaths had occurred among them. The Medical Board consists of Drs. T. P. Shaw, Chairman; Geo. D. Little, R. R. Struthers, Wm. Enright, and Graham Ross.

Half a million dollars is to be spent on a building in Montreal, now being constructed on Drummond Street just above St. Catherine Street. The building, with the exception of the ground floor, which is to be given over to shops, has been designed exclusively for doctors and dentists. It will be eleven storeys high, and will contain 40,000 square feet of office space. At the back of the structure, and with an entrance off a lane leading out on Drummond Street, there will be a garage five storeys high, capable of accommodating more than four hundred cars.

The Jewish community of Montreal has just concluded a campaign to raise a minimum of $1,000,000 for the erection of a modern and well-equipped hospital. This hospital will be open to all, irrespective of race or creed, and will contribute another 150 beds to fill the disheartening gap in hospital accommodation from which this great city of a million so tragically suffers. The sympathy of the entire community, irrespective of race or creed, is with our Jewish friends in this public-spirited effort. The need cannot be denied. Montreal is badly under-hospitalised. Every movement to provide an additional hospital is worthy of the most earnest public support. Then, it will be generally remembered that the Jewish community, in keeping with the traditions of their race, have always been mindful of their responsibilities, and the contributions they have made to the communal activities of the city, in addition to those outside of their own sphere to which they have been generous subscribers, are very properly recalled at this time. Through the Federation of Jewish Philantropies and other agencies they have always taken good care of the unfortunate among their own people. The needs of little children have enjoyed particular attention, for the Jews have always been great in family life. Now they look forward to a fulfilment of a dream of long standing —a general and maternity hospital—which will be the culminating point of all their good work. We are glad to note their success.

The hospital promised by Premier Taschereau some months ago to the Montrealers of St. Henry's division will be erected next month. It is to be situated on College Street, next to the St. Henry Parish Church, and will be erected at a cost of more than $300,000, about two-thirds of which, to be exact, $230,000, will be paid by the Provincial Government. The new hospital will come under the Public Charities Act, and will contain 200 beds. It will be under the direction of the Grey Nuns, but open to citizens of all races and denominations. It is expected that its building will start early in September and will be completed early next spring. It is expected that the daily grants under the present ratio will allow the hospital to meet its expenses. Great care is to be given to the children's department, while the men and women's sections will be inferior to none.

The Faculty of Medicine of Laval University has been classed in Category A by the American Medical Association. The latter body, as most doubtless know, has been classifying faculties of medicine for the last few years, so as to eliminate undesirable schools, and to raise the standards of teaching in medical colleges.

The annual report of Dr. S. Boucher, Director of Health, covering vital statistics, which was issued recently, shows that births exceeded deaths in 1928 by 9,346. In 1928 there were 2,919 deaths of children under one year, or a percentage of 143.82 per 1,000 of population on the basis of calculation used by the city health department. There has been a decrease in deaths from diphtheria, cancer, and tuberculosis of the lungs in the past five years' period. The death rate has decreased constantly since 1918, while the birth rate has decreased since 1909.

A series of scientific lectures will be delivered this season at both universities under the auspices of the Franco-Canadian Scientific Institute. Professor Jean Gautrelet, director of the laboratory of experimental biology, at the Faculty of Medicine of Paris,

XUM

will speak at the University of Montreal on "Physiological technique," and at McGill on "The animal as factor of physiological response." Dr. Mouriquand, of the Faculty of Medicine of Lyons, will lecture on child hygiene. Professor Cabanne, of the Faculty of Medicine of Montpellier, will be the guest of both universities, where he will speak on the latest developments in practical physics. Dr. Cabanne is well known in Canada, following the research work in which he was engaged some time ago in connection with the University of Toronto. Some time in November, Professor Etienne Gilson will come to Montreal where he will lecture at both universities on medical philosophy and the early scholastics.

Visiting physiologists on their way home from their recent convention at Boston were the guests of the Province at a dinner at the Ritz-Carlton Hotel on September 5th. Hon. L. A. David, Provincial Secretary, presided and delivered the main address. Sir Arthur Currie, Principal of McGill University, was also present. Mr. David expressed the pride of the province in greeting some 300 prominent visitors from Great Britain, France, Japan, Italy, Germany, Spain and the United States, all so distinguished by their world-known scientific efforts and achievements. Referring to the world desire for durable peace, the Minister gave this province as an example of what can be attained when good-will, co-operation, and public spirit are not lacking. He had seen many triumphs of British policies, he said, but none more typical than that which united for a common cause the sons of two great races. The toasts were proposed and seconded by Dr. Asselin, of the University of Montreal, and Prof. John Tait, of McGill University.

Sir Arthur Currie spoke of the part played by Canadians of French descent in the building of Canada and added a few remarks on the greatness of the country. "Nowhere in the world," he said, "is to be found a 4,000-mile corridor where such immense resources are to be found." Prof. Dr. Armin Tschermack-Seysenegg, of Prague, who spoke in German, Senator Foa, of Milan, Dr. Heron, of Montpellier, and Dr. McSwiney, of Leeds, England, expressed the pleasure of the visitors at the welcome they received here.

GEORGE HALL

MANITOBA

The provincial Department of Public Welfare and the provincial Sanatorium Board have modified a plan to erect a tuberculosis sanatorium in the Winnipeg district, for which the Manitoba legislature voted $250,000 at its last session. Instead of the sanatorium the money, or a large portion of it, will be devoted to establishing a sanatorium for tuberculous children, and a central clinic whose chief function will be the examination of patients for discovery of incipient cases of tuberculosis. It is stated that the Sanatorium Board recently acquired the Pearl Street fire hall which is to be converted into a sanatorium for children. The Board is now negotiating for property in which the central clinic will be located.

The provincial government will erect during the winter a new custodial unit at the Selkirk Mental Hospital. The proposed unit will be a three-storey, plain brick building, with dormitories, dining rooms, recreation space, and workroom, for approximately 175 patients.

Up to September 3rd, fifteen cases of infantile paralysis have been reported in Manitoba, nine of these from districts which were only slightly affected, or escaped entirely, last year.

ROSS MITCHELL

SASKATCHEWAN

The sixteenth annual convention of the Sanitary Inspectors Association of Canada met in Moose Jaw for three days. E. W. J. Hague, President and Chief Health Officer for Winnipeg, in his presidential address, dealt with water supply, swimming pools, chemical refrigerators, illuminating gas, and carbon monoxide hazards in garages, and flies and body lice. Dr. B. M. Bayley, Medical Health Officer of Moose Jaw, spoke on "Communicable diseases." Dr. W. McDonald, Veterinary Inspector of Moose Jaw, spoke on "Bovine tuberculosis." James Arkle, sanitary inspector at St. James, Man., spoke on "Building construction in relation to public health." In some states, he said, construction was not allowed in subdivisions unless there were paved roads and sidewalks, sewer and water connections already installed.

Dr. John G. Grant, who had intended to specialize in the practice of pædiatrics in Regina, has decided to locate in Saskatoon, where he has opened an office.

LILLIAN A. CHASE

ALBERTA

What is said to be the best equipped hospital in any of the rural districts of Alberta is at present being erected at Bonnyville by Roman Catholic Sisters from France. It is finely situated on the north bank of the lake. It will have forty-two beds. The United Church of Canada also has a fully equipped hospital in this town.

A question of ethical practice was recently raised by a physician practising in a rural district. He is of the opinion that city consultants and practitioners should treat their country confrères just as they would their fellow practitioners in the city. A country patient should not be accepted for treatment except in urgent cases, unless the physician who has been attending him in the country has been paid and dismissed from the case. This raises what may be considered a new issue, namely: should a patient's freedom to go from one physician to another be limited to the first physician who attended him, also to what extent should city physicians, by such refusals, assist in collecting the accounts of the country physicians?

Another question has been raised by doctors practising in the country. Should all country calls be answered, regardless of the time the call is put in or the nature of the patient's illness? Last spring, a physician, practising in one of the country districts, was called to see a child during the night. The roads

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were impassable for an automobile and the only livery team available at any time had all that day been driven from place to place and was wholly unfit for further work. The physician after explaining the situation suggested to the farmer who lived twelve miles from the town, that he should come in for him and he would be ready to go when he arrived. The farmer consulted his wife and then replied. "It will be all right to come at eight o'clock in the morning." The case apparently not being urgent, the physician replied, "I will not go in the morning."

The town of Mundare, the centre of the Ukrainian settlement, will soon have a good modern hospital which is being erected through public subscriptions. It will be capable of accommodating twenty-five patients.

Through the increase in the number of hospitals in the rural districts where there are large numbers of European settlers, and the greater use being made of them, there has been a very considerably lessened mortality, among women and infants especially.

Dr. P. P. Smyth, for many years in practice in Big Valley, has removed to Ocean Falls, B.C.

Dr. Reid, of the Rockefeller Institute, New York, recently addressed the members of the Calgary Medical Society on "Some of the uses of ephedrin."

Dr. M. R. Bow, Deputy Minister of Health in Alberta, addressed the members of the Calgary Medical Society on September 10th, on the subject of "Maternal mortality as a public health problem."

Dr. Heber Jamieson, of the University of Alberta, is collecting data on the lives of the early medical practitioners in this province, and requests physicians throughout the province to furnish him with facts of interest in this work.

Dr. Michael Buriek of Radway Centre is now serving an interneship in a hospital in one of the industrial centres of Pennsylvania.

Dr. J. W. Scott, of the Department of Biochemistry in the University of Alberta, is at present, engaged in post-graduate work in England.

Dr. T. R. Whaley of Alsask is now doing post-graduate work in New York. He intends settling in Vancouver.

Dr. R. K. Johnstone has given up his municipal contract practice at Brock, Sask., and has registered in Alberta.

Dr. A. D. Callbeck, of Stettler, who has been engaged in eye, ear, nose and throat practice, has left for the coast, where he will take a year's rest.

In our last issue an error appeared, in that it was stated that Dr. J. W. Auld of Calgary, had spent several weeks in Philadelphia doing post-graduate work in genito-urinary diseases. Dr. Auld writes to say that he spent six weeks recently in Philadelphia, under Schamberg, studying dermatology and syphilology. We regret the mistake.

G. E. LEARMONTH

BRITISH COLUMBIA

At the annual meeting of the British Columbia Medical Association in Vancouver, September 25th and 26th, in addition to the routine business, an exceedingly interesting program had been arranged. Lectures were given by Dr. K. A. MacKenzie, of Halifax, N.S.; Dr. George S. Young and Dr. Gordon E. Richards, both of Toronto; Dr. George S. Murphy, of Halifax, and Dr. H. B. VanWyck, of Toronto. Dr. A. T. Bazin, of Montreal, President of the Canadian Medical Association, was also present and spoke on a number of occasions, and there were addresses by Dr. Ross Millar, of the Federal Department of Health; Dr. G. Harvey Agnew of the Department of Hospital Service, Canadian Medical Association; and Dr. T. C. Routley, General Secretary of the Canadian Medical Association. The meeting was featured by a golf tournament, and a number of social functions were arranged for the visiting ladies.

The outstanding recent event in medical circles in Vancouver has been the opening of the new Medical and Dental Building. This is a thoroughly up-to-date building of sixteen storeys located at the corner of Georgia and Hornby Streets. It contains office accommodation for approximately two hundred and fifty doctors' and dentists' offices; an auditorium which will seat 150, and houses the library of the Vancouver Medical Association and the library of the Dental Society. On the third floor a 20-bed hospital is provided, equipped with two modern operating-rooms. In the rear of the building a four-storey ramped garage provides accommodation for the tenants' motor cars.

On September 7th a formal opening was held when large numbers of visitors were shown through the building. It may be said, that the occupation of this building marks an epoch in the history of medicine in Vancouver.

The following physicians have become registered in British Columbia: Drs. William L. K. Cockle, of Trail, B.C.; Spencer G. Elliot, of Vancouver, B.C.; Einar H. Erickson, of Proctor, B.C.; Irlma Kennedy, of Vancouver, and P. S. Tennant, of Armstrong, B.C.

Dr. H. H. McIntosh and Dr. W. A. Whitelaw have become associated in practice in new quarters in the Medical Dental Building.

Dr. A. B. Wilson, of Port Alberni, recently motored to his home in Edmonton on a visit.

Dr. G. Morris, of Port Haney, has resumed practice, following an extended visit to eastern centres.

Dr. P. A. McLennan is spending some time in the east where he will attend the meeting of the Dominion Medical Council.

Among the recent visitors to Vancouver were Dr. J. F. Haszard of Kimberly, Dr. E. L. Garner of Duncan, and Dr. A. E. H. Bennett of Ocean Falls.

Dr. G. A. Lawson of Port Alice is visiting his home on Shoal Lake, Man.

Dr. L. G. C. D'Easum, formerly of Ocean Falls, is practising in Chilliwack, B.C.

Among the contingent of golfers who attended the Totem Pole Golf competition at Jasper Park were: Drs. B. D. Gillies, Lyall Hodgins, N. E. MacDougall, and J. G. McKay.

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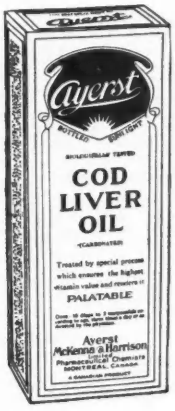

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UNITED STATES

The Nineteenth Annual Clinical Congress, American College of Surgeons

The American College of Surgeons will hold its nineteenth annual Clinical Congress in Chicago, October 14th to 18th. Headquarters will be at the Stevens Hotel. An intensive program is being planned to make this event the greatest in the history of the College.

The Hospital Standardization Conference will consist of morning and afternoon sessions on Monday to Thursday inclusive. There will be a series of clinical demonstrations, given by: George W. Crile, Cleveland; John B. Deaver, Philadelphia; John M. T. Finney, Baltimore; Charles H. Mayo, Rochester, and others. Monday evening's program will include an address of welcome by the Chairman of the Chicago Committee on Arrangements, Dr. L. Kretschmer; the address of the retiring President, Dr. Franklin H. Martin, Chicago; the inaugural address of the new President, Major-General Merritte W. Ireland, Washington, D.C.; and the John B. Murphy Oration in Surgery by Professor D. P. D. Wilkie of Edinburgh. Among the foreign visitors will be: Dr. James Heyman, of Stockholm; Dr. Thierry de Martel, of Paris; Visconte Aguilar of Madrid, and Mr. Herbert Tilley, of London. On the evenings of Tuesday, Wednesday and Thursday scientific papers will be presented by surgeons from the United States, Canada, and abroad. The Convocation of the College will be held on Friday evening. The Fellowship Address will be delivered by Dr. Glenn Frank, President of the University of Wisconsin. The annual meeting of the Governors and Fellows will be held on Thursday afternoon, followed by a symposium on cancer and bone sarcoma. An all-day session on traumatic surgery will be held on Friday, in which leaders in industry, labour, indemnity organizations, and the medical profession will participate. A special program has been arranged that will be of interest to those whose practice is limited to surgery of the eye, ear, nose and throat.

A feature of the Congress will be the showing of surgical films that have been produced under the supervision and approved by the Board on Medical Motion Pictures of the College. New developments in colour photography will also be demonstrated. In addition to the commercial exhibits, there will be scientific exhibits by the departments of the College.

A rate of one and one-half the regular one-way fare has been granted on railroads of the United States and Canada to those holding convention certificates.

Second Graduate Fortnight of the New York Academy of Medicine

Encouraged by the success of the First Annual Graduate Fortnight held last October, The New York Academy of Medicine has arranged for a second Fortnight, to be held October 7th to 19th of this year and has chosen as the subject "Functional and nervous problems in medicine and surgery." The field includes those functional disturbances which have been much neglected in the last thirty years in comparison with the structural disturbances of the human body. The topic covers differential diagnosis of functional and organic derangements in all branches of medicine and surgery. It is believed that the subject will attract not only the medical profession generally but also social workers and those interested in public welfare.

In the afternoons a number of the large hospitals of the city, with an abundance of clinical material, will co-operate in the Fortnight by presenting specially arranged clinical programs bearing upon different phases of the general subject. Besides the special programs which will be presented, over forty of the teaching hospitals of the city will offer (mornings and afternoons) non-operative clinics and clinical conferences in various clinical specialties, and in mental hygiene subjects such as behaviour and habit problems, child guidance, and vocational adjustment.

Evening sessions will be held at the Academy at which well known authorities will discuss many phases of the general subject.

The Chairman of the Graduate Fortnight Committee is Dr. Harlow Brooks, 47 West 9th St., New York City.

The Inter-State Post-Graduate Medical Association of North America

A meeting of this Association will be held at Detroit, Mich., from October 21st to 25th, inclusive.

The President is Dr. John B. Deaver, Philadelphia, and the President-elect is Dr. William D. Haggard, Nashville, Tenn.

A splendid program has been provided. We note the names of Canadians who will take part: Drs. Alan Brown, Toronto; H. B. Cushing, Montreal; D. Graham, Toronto; Alexander Primrose, Toronto; C. P. Howard, Montreal. A number of distinguished visitors from Europe are expected. Among them are: Dr. J. M. LeMée, Paris; Dr. Thomas K. Monro, Glasgow; Sir Frank Colyer, London; Professor E. F. Müller, Hamburg; Dr. T. de Martel, Paris; Prof. D. P. D. Wilkie, F.R.C.S., Edinburgh; Dr. Ferd. Sauerbruch, Berlin.

All necessary information can be obtained from the Managing Director, Dr. William B. Peck, Freeport, Ill.

The Clinical Congress and the Eighth Annual Meeting of the American College of Physical Therapy, November 4, 5, 6 and 7, 1929, at the Hotel Sherman, Chicago

Chicago has again been selected as the annual meeting place for the Clinical Congress of Physical Therapy of the American College of Physical Therapy.

One of the novel features to be inaugurated this year is the clinical part of the program. One half of each day will be devoted to a variety of clinics in the sections on medicine, surgery and allied specialties, and eye, ear, nose and throat. Education in physical therapy will be thoroughly stressed, as the time has come when this phase of the subject must be given due emphasis by an organization such as the American College of Physical Therapy. Scientific papers, clinical addresses, demonstrations of technique, and scientific and technical exhibits, will comprise the remainder of a scientific program which merits the attention of all those interested in the newer fields of medicine. Attendance at the congress is not limited to the fellows of the College, as all duly licensed physicians, their technicians and assistants, properly sponsored, are cordially invited to attend all the sessions.

The program and any other information may be obtained by writing to the Executive Offices, American College of Physical Therapy, Suite 716, 30 N. Michigan Avenue, Chicago, Illinois.

The American Board of Otolaryngology

An examination was held in Portland, Oregon, July 8th, during the meeting of the American Medical Association. Thirty-seven applicants appeared for examination, with 11 per cent of failures.

The next examination will be given on Monday, October 21st, in Philadelphia, preceding the opening

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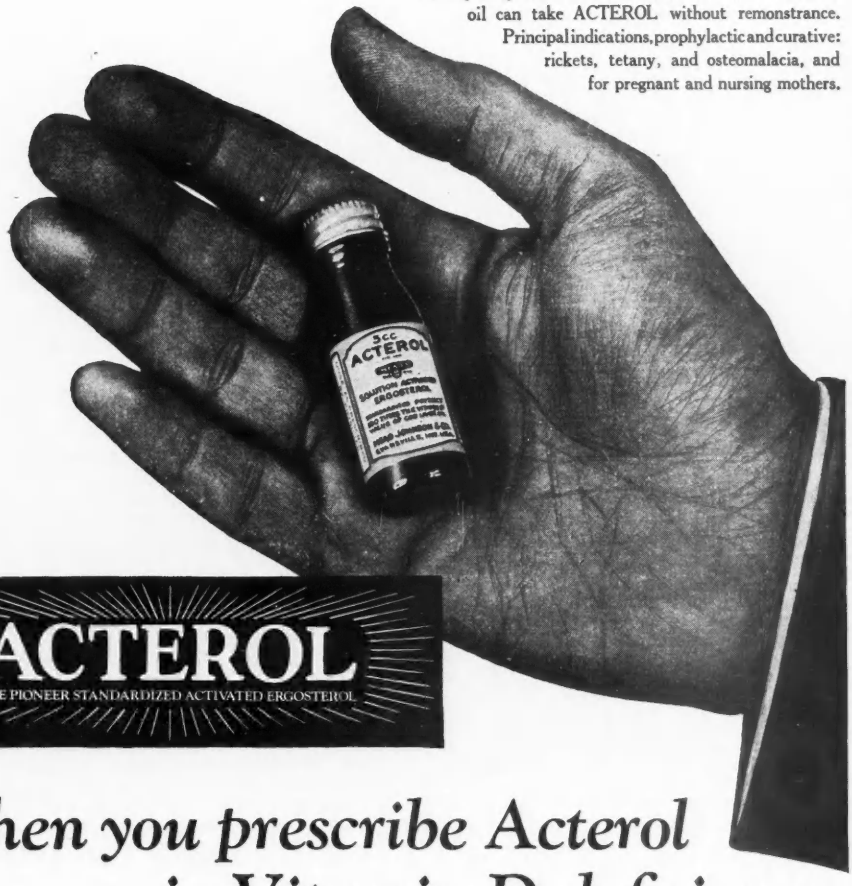

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of the meeting of the American Academy of Ophthalmology and Otolaryngology in Atlantic City.

Prospective candidates for certificates should address the Secretary, Dr. W. P. Wherry, 1500 Medical Arts Bldg., Omaha, Nebraska, for proper application blanks.

Noise in Chicago

A determined effort is being made in Chicago to see if in any way the distressing noise prevalent in the business sections of that city can be reduced. This investigation is being carried out at the instance of the Chicago Surface Lines, by Prof. J. K. Tuthill, of the Electrical Engineering Department of the University of Illinois. He is spending about three months in experimenting to determine the intensity of noise and what may be done to street cars particularly to make their operation less annoying.

Professor Leriche

Professor René Leriche, of Strasbourg, France, was recently granted the degree of Doctor of Science *honoris causa* by Harvard University. Professor Leriche has been at the Peter Bent Brigham Hospital, Boston, where he has been in temporary charge of the surgical clinic on the invitation of Professor Harvey Cushing. This is the first time, it is said, that this honour has been conferred on a French medical man.

The American Association for the Study of Goitre

The Executive Council of the American Association for the Study of Goitre announces that a prize of three hundred dollars ($300.00) and a medal of honour will be awarded by the Association to the author of the best essay based upon original research work on any phase of goitre, presented at their annual meeting at Seattle, Washington, in September, 1930.

Competing manuscripts must be in the hands of the Corresponding Secretary by July 4, 1930, so that the award committee will have sufficient time to thoroughly examine all data before making the award.

Full particulars of other regulations governing details of the offer will be furnished on application.

The American Association for the Study of Goitre hopes this offer will stimulate valuable research work on the many phases of goitre, especially on its basic cause. J. R. Yung, Corresponding Secretary, Rose Dispensary Bldg., Terre Haute, Ind., U.S.A.

GENERAL

The Thirteenth International Physiological Congress

The Thirteenth International Physiological Congress met this year in Cambridge, Massachusetts, from August 19th to 23rd, under the general presidency of Prof. W. H. Howell, of Johns Hopkins University. The meeting was notable not only for the eminence of many of the members but for the large attendance. Considerably more than 1,600 were present. Only 250 had been expected from Europe and the east, but 750 appeared. Thus the resources of the committee of arrangements were considerably taxed. The most notable of the delegates was, probably, Prof. I. P. Pavlov, the veteran physiologist of Leningrad, now in his eightieth year, and still active. Professor Pavlov paid a flying visit to Montreal after the close of the Congress, in order to see his former assistant and friend, Prof. B. P. Babkin.

A special interest for us here attaches to the fact that a substantial proportion of the visiting physiologists included Canada in their itinerary. The official delegation consisted of 142 members, who on their way here visited Wood's Hole, New Haven, New York, entering Canada at Niagara Falls. So many others were desirous of visiting Canada, however, that another trip was organized by Cook's Tourist Agency. This party, which numbered 107, went to Rochester, N.Y., where they visited the University and were entertained there. After visiting Niagara Falls, both parties proceeded by boat to Toronto, and then continued on through the Thousand Islands and the rapids of the St. Lawrence. While in Toronto they visited the University and were entertained by both the Province and the University. Cook's party arrived in Montreal on the evening of September 3rd and the official party on the next day.

Among the distinguished visitors the following were noted: Professors or Doctors Emil Abderhalden (Halle), Léon Binet (Paris), F. Bottazzi (Naples), Ernst Brücke (Innsbrück), Alfred Clark (Edinburgh), E. de Burgh-Daly (Birmingham), Gustav Embden (Frankfurt-am-Main) Carlo Foa (Milan), J. Gautrelet (Paris), H. Handovsky (Göttingen), Heron (Montpellier), C. Heymans (Ghent), R. Hoeber (Kiel), B. A. McSwiney (Leeds), Nagai (Tokio), A. Tscherman-Seysenegg (Prague), E. Waldschmidt-Leitz (Prague), and H. Winterstein (Breslau).

Two days were spent in Montreal, where the visitors were entertained by the Province of Quebec, the City of Montreal, McGill University, and the University of Montreal. The return to Europe was made on the *S.S. Doric*, which sailed on September 4th.

The next International Congress will convene in 1932, in Italy, probably either at Rome or Milan.

The International Council of Nurses

The Sixth General Congress of the International Council of Nurses was held in Montreal during the week beginning July 7th. There was a total registration of 6,213 nurses, 3,034 coming from the United States, 2,822 from Canada, and 357 from other countries. In all, thirty-four nationalities were represented. The Congress was under the general presidency of Miss Gage, who received many encomiums for the able way in which she conducted the meetings.

Addresses of welcome were extended on behalf of the Governor-General and the Government of Canada, the City of Montreal, McGill University, the University of Montreal, the Canadian Medical Association, and the Canadian Nurses Association. Telegrams of greetings were received from H.R.H. Princess Arthur of Connaught, State Registered Nurses of England, from Mrs. Bedford Fenwick, founder of the Council, and from Miss Mary Agnes Snively, the founder of the Canadian Nurses Association.

Five nations, Brazil, Greece, Jugoslavia, Sweden, and the Philippines, were received into membership. A delightful feature of the gathering was the presence of Mrs. Rebecca Strong, one of the first Scottish nurses, who, in spite of her eighty-six years, had made the journey from Glasgow to Canada in order to attend the Congress. Mrs. Strong briefly addressed the assembly, emphasizing the value of education.

Several gentlemen were present by invitation and gave addresses. These were Professor G. B. Roatta, of Florence, who spoke in the Public Health Section on "Developments in public health nursing"; Professor Julius Tandler, of Vienna, who spoke on "The scientific method in social and health work"; Dr. Stanley Ryer-

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son, of Toronto, on "The preparation of a curriculum"; Dr. Charters, from the United States, on "Trends and developments in vocational education"; Mr. S. P. Davies, New York, on "A community program in mental hygiene"; and Hon. Dr. Manion, on "The interdependence of nations."

One of the special features of the gathering was a trip to Ottawa, through the courtesy of the Canadian Pacific and Canadian National Railways.

Many topics were discussed. Chief among them were: the education of nurses, the nursing curriculum, legislation affecting nurses, mental hygiene, social service, private duty nursing. In appraising the general value of the congress, the special sub-committee of the committee on the program remarks, rather naively, "It seems to this committee an extremely significant fact that out of thirty meetings at this Congress only one was devoted to the actual practical nursing care of the patient. For one hour and a half, out of approximately seventy-five hours of meetings, the delegates studied new devices and adaptations in the bedside care of the sick. The only redeeming feature of the situation was that the auditorium where the demonstrations were held was crowded."

The officers elected for the term 1929 to 1933 were: *President*, Mlle. LéonieMaria Chaptal, of Paris; *First Vice-president*, Miss C. D. Noyes; *Second Vice-president*, Miss Jean Gunn; *Hon. Treasurer*, Miss E. M. Musson; *Hon. Secretary*, Miss Christiane Reimann. The next Congress will be held in Paris and Brussels.

The Anti-Vivisection Movement Spreads

Nationalization of the anti-vivisection movement has been started by efforts made by Charles Fyfe, treasurer of the Montreal branch of the Anti-Vivisection Society of Canada, who has returned from a trip to Alaska taken with the Pitman Tours. At a meeting of delegates representing western centres held at Victoria, B.C., it was decided to extend the movement and that any units formed throughout the west should be affiliated with the Montreal society, which holds a federal charter. There will be two sections, eastern and western, with vice-presidents for each, and both under the Montreal presidency and treasurership.—Montreal *Gazette*, Aug. 21, 1929.

Postage Stamps

The first medical men's portraits to appear on postage stamps were those of miltary surgeons: Kaczkowski, surgeon-general of the Polish Army in 1831, appeared on Polish stamps in 1927, and Surgeon-General W. C. Gorgas on a recent issue of the Republic of Panama.

Small-Pox in Germany and England: A Contrast

In 1928 only 2 cases of small-pox occurred in Germany, both of a mild type, as compared with 4 in 1927 with one death, and 7 in 1926 with no deaths. In England and Wales the number of cases of small-pox in 1928 was about 12,400.

Book Reviews

The Writing of Medical Papers. Maud H. Mellish-Wilson. Third edition, 184 pp. Price, $1.50. W. B. Saunders Co., Philadelphia and London. McAinsh & Co., Toronto, 1929.

This little work by the editor of the Mayo Clinic Publications is designed to assist those who desire to write well for the medical profession, and who, accordingly, may wish to acquire the craft of writing with the least possible effort and delay. The topics considered have been reduced to the minimum, and an interesting feature of the book is the introduction of quotations from other writers by whom the various thoughts have been happily expressed. The subject matter is arranged in two parts: chapters one to seven are specifically technical; chapters eight to twenty are general.

The present reviewer, who happens also to be an editor, has perused this book with much interest, and, it may be confessed, with not a little profit. The task of a medical editor in the United States does not differ greatly from that of his Canadian brother, for the difficulties in the way of good writing are not conditioned by nationality. The advice given by Mrs. Mellish-Wilson is always helpful and to the point, and is usually sound. She quotes Dr. J. S. Billings' four rules for medical writers, which might well be engrossed in letters of gold. "(1) Have something to say. (2) Say it. (3) Stop as soon as you have said it. (4) Give the paper a proper title." In the first chapter we note the following words of wisdom. "Writers should not be too ready to follow others in the misuse of terms or words." It is, unfortunately, quite easy to be slipshod in the use of language, and at the present time, unquestionably, a conscious effort should be made to maintain the intelligibility and purity of English.

As in the case of other "style books" there is a chapter on "Don'ts," which is not to be passed over. We would like, in fact, to reproduce it *in extenso*, but must confine ourselves to what are perhaps the most common errors. Don't say "There was no pathology in the appendix." Don't say "The patient was operated." Don't use medical slang, such as, "The acute abdomen," "The chronic appendix," "The hæmatogenous kidney." Don't use commonplace and overworked expressions, such as, "vast majority," "startling fact," and "the consensus (not concensus, by the way) of opinion." "Don't forget that skipping about from tense to tense—commingling past, present, and future—in one time and paragraph, has not even a Bergsonian justification. It is blasphemous, ungrammatical, and annoying." Amen. Among other errors mentioned are: *x-ray* for *roentgenological* or *radiological; case* for *patient; individual* for *person; tubercular* for *tuberculous*; *above* for *more than.* The plural forms of words of Latin or Greek derivation provide many pitfalls. Thus, *prodroma* is a plural form and should not be replaced by *prodromata; data* is plural, and, therefore, should only be used with a verb in the plural; *phenomena* is plural, so that *a phenomena* is inadmissible. Nor will *vocal fremiti* pass muster. *Alright* is not *all right.*

A useful tabulation of adjectives with variant endings is found on page 56. There is a marked tendency in American medical publications to shorten adjectives which are commonly spelled by English authorities with the termination *-ical* to *-ic.* If it is earnestly desired to shorten such words it may, doubtless, be justified in many cases, but it should not be overlooked that, not infrequently, the two endings connote different ideas. Mrs. Mellish-Wilson mentions some of these. Thus *alphabetic* means "pertaining to an alphabet;" *alphabetical* means "in the order of the letters of the alphabet." A similar case is *historic* and *historical.* Mrs. Mellish-Wilson gives *microscopic*, but might also have given *microscopical. Microscopic* has relation to the microscope; *microscopical* means "of a size so small as to require the use of a microscope." We should like also to have had her views on "proven" for proved" and "technic" for "technique." Under the heading Usage

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of Words lists of words often used and of words to be preferred are given. We cannot follow the author's practice here in every case. *Chronic interstitial nephritis* is not the equivalent of *Bright's disease;* the latter expression connotes, certainly, much more than the former. It is not often that it is desirable to affix a personal name to a disease, but this is one of the cases where it seems to be an advantage. When used in an adjectival sense we prefer *round-celled to round-cell.*

Bibliographical references should be exact, complete, and set down in accordance with standard practice.

The book is concluded by a complete list of standard abbreviations for the names of medical journals, and an excellent index.

We know of no better book for its purpose than Mrs. Mellish-Wilson's "The Writing of Medical Papers."

A. G. NICHOLLS

Practical Materia Medica. Clayton S. Smith, Ph.D., M.D., and Helen L. Wikoff, Ph.D. 300 pages. Price $3.25. Lea & Febiger, Philadelphia, 1929.

Drugs are dealt with according to their composition under the main divisions, Inorganic and Organic, with the following chapter headings, metals, acid, non-metallic elements; the aliphatic series, the aromatic series, terpines, carbohydrates, glucosides, fats, aliphatic compounds containing nitrogen, alkaloids. Part three is devoted to toxicology and part four deals with prescription writing.

The authors are more interested in chemistry than in physiology. Instead of definitely and clearly stating the physiological action of the drug under discussion and letting the student or the practitioner judge for himself whether he will use it or not, they make statements such as "Uva ursi is used almost exclusively in the treatment of catarrh of the urinary tract, especially acute cystitis. Formerly it was employed in the treatment of gravel, nephritis, urethritis and menorrhagia, but its use for these conditions has largely been abandoned. Uva ursi probably owes its antiseptic action to the formation of hydroquinone which results from the hydrolysis of arbutin in the body." Again "Numoquin base, a proprietary remedy is synthesized from quinine. Its use has been recommended in the treatment of lobar pneumonia." Some experimental or clinical evidence should have been adduced to support this statement. Again, "codeine is used in expectorant mixtures and to allay intestinal and pelvic pains." Many do not confine its use to effects on these areas.

Is not the placing of questions after a chapter, as these authors have done, an admission of belief that the instructor lacks the intelligence to frame his own?

The antidotal treatment of poisons is clear, concise and practical; to the practitioner this section will be the most useful; the medical student will find it a concise reference book, but will need a fuller text for the complete story of what drugs do.

LILLIAN A. CHASE

Report on Fourth International Congress of Military Medicine and Pharmacy, Warsaw, Poland, May-June, 1927. William Seaman Bainbridge, M.C.F., United States Naval Reserve. 248 pages, illustrated. The Collegiate Press, Menasha, Wisconsin.

This is an official report of the Congress held at Warsaw, Poland, in May and June, 1927. Meeting every second year, the fifth Congress has been in Session in London, England, during May, 1929, and has been reported in the *British Medical Journal* of May 18.

At the Warsaw meeting thirty-one countries and the Red Cross were represented by about 225 official delegates, and discussed were Evacuation in Moving Warfare; Etiology and Prophylaxis of Influenza; Sequelæ of Traumatisms of the Skull; the Arsenobenzols, their chemical determination; and Organization of Dental Services. The volume of proceedings, as reported by the official representative of the United States, is a valuable addition to the literature of Military Medicine.

J. H. ELLIOTT

Tuberculous Intoxications. Concealed and Masked Tuberculosis. Joseph Hollis, M.D. 132 pages. Price $3.00. Edinburgh, E. & S. Livingstone. Toronto, Macmillan Co. of Canada, 1929.

In this small volume the author describes many and varied vague symptoms which he believes are caused by the toxic absorption from old standing and seemingly inactive tuberculous foci. Among the various symptom-complexes he notes those characteristic of neurasthenia, rheumatism, neuralgia, thyrosis epilepsy and also many disturbances of the digestive and genito-urinary systems. His chapter on immunity to tuberculosis is of interest. He lays particular stress on two observations, *viz.*, "Hereditary immunity plays a large rôle in decreasing the intensity of the tuberculosis which may affect generation after generation," and "There is actually a tendency toward tuberculosis in everyone descending from parents free from tuberculosis." Be this as it may, he cites numerous case reports to illustrate his observations and theories.

Dr. Hollis combats these intoxications by means of tuberculins and immune blood. The latter he administers either hypodermically or by inunction in dilutions as high as 1-10,000.

He obtains his immune blood by the inoculation of rabbits with cultures made from the tuberculous sputum, and uses the washed and subsequently hæmolized red cells.

A. H. MACCORDICK

Percussion of the Chest. J. B. McDougall, M.D. H. K. Lewis & Co., London, 1929. 6/- net.

This book might be regarded as an attempt at presenting percussion of the chest "in extenso". The subdivisions are entitled as follows: I. Historical. II. The Technique of Thoracic Percussion. III. The Acoustic Aspect. IV. Variations in the Percussion Note in Certain Diseases of the Chest.

The historical survey includes the epoch-making contribution of Auenbrugger's in 1761, the revival of the art of percussion by Corvisart in 1808 and the improvements in technique brought about by Piorry, Skoda, Goldscheider and others.

In the section on the technique of thoracic percussion there is a strong plea for light percussion. This chapter is of especial value to the teacher and student as it contains many practical clinical suggestions.

The third part, the acoustic aspect, classifies the sounds heard on percussion and describes completely the constituent parts of the sounds, *viz.*, intensity, duration, pitch and quality.

Finally the author links up the common clinical thoracic lesions with this important everyday method in physical diagnosis. There is an extensive bibliography from which the author has made numerous citations.

The author has limited himself entirely to the subject and perusal of the book will well repay those interested in clinical medicine.

W. R. KENNEDY

Recent Advances in Psychiatry. Henry Devine, O.B.E., M.D., F.R.C.P. Pages 340. P. Blakiston's Son and Co., Philadelphia, 1929.

This is a welcome review indeed if for no other reason than that a cursory glance at the table of

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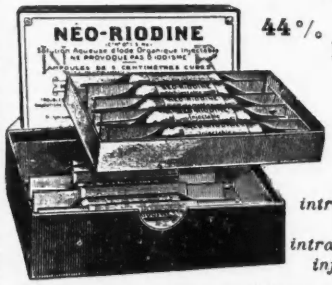

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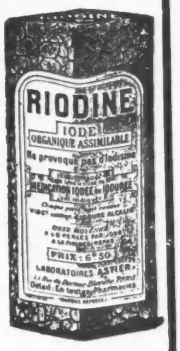

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contents will give even the nonpsychiatric-minded the impression that psychiatry is not without change and that the day of resignation to any fatalistic viewpoint is past.

The first chapter gives an admirable statement of the present day conservative psychiatric viewpoint; namely, that the understanding and treatment of the problems mental illnesses present are to be founded on a study of all the available facts, those of heredity, of biochemical and anatomical pathology and of the life experiences of the individual. Any formula which neglects these facts for the sake of pseudo-simplicity is inherently at fault.

The chapters which follow deal with advances made during the past few decades concerning the toxic, infective, and somatic factors in psychoses, the effects of somatic disease on the course of psychoses and the biochemical and physiological dysfunctionings in psychoses. A short discussion of personality types and constitution, and the suggested abnormal functionings which may be the basis of dementia præcox and manic-depressive reactions are presented. Finally a discussion of the various suggested modes of psychogenesis and psychotherapy is given briefly.

The topics discussed cover too wide a range to deal with in detail but one notices a rather definite leaning on the part of the author to stress those aspects of recent work which deal with other than that which may best be summed up in the terms of life experience and habit formation. Certain topics are discussed more critically than others and the author puts forward his own viewpoint quite clearly in places, as instanced in his discussion of the unconscious.

The separate chapters are concluded by adequate bibliographies of references which are mostly English or translations.

W. C. M. SCOTT

Injection Treatment of Internal Hæmorrhoids. Marion C. Pruitt, M.D. 137 pages, illustrated. Price $3.00. St. Louis, C. V. Mosby Co. Toronto, McAinsh & Co., 1929.

The book is descriptive of the treatment of hæmorrhoids by the injection method. The technique is given in detail and the various solutions used are discussed. Results of treatment by various methods are compared.

L. H. MCKIM

Handbook for Diabetic Patients. Abraham Rudy, M.D. 180 pages. Price $2.00. M. Barrows & Co., Boston, 1929.

The new feature in this guide is recipes for dishes native to many different countries. Among those represented thus are Greece, Sweden, France, Armenia, Italy. Many Jewish menus are given also.

Photographs of exercises for aged diabetics with poor circulation are also new. The general instructions in regard to hygiene and urine testing and weighing food differ little from other diabetic guides.

This book will be useful to dietitians dealing with a clientèle of varied racial origins. Every Jewish patient will want to own a copy. Even the tired housewife, wondering what to give a normal family for the next meal, could get some ideas from it.

LILLIAN A. CHASE

Medical Information in Sickness and Health. Philip Skrainka. 577 pages. Coward McCann, Inc., New York, 1929.

In his preface to this book the author states that the thought uppermost in his mind is "to bring doctor and patient closer together in a spirit of amity." The opening chapters deal with a general outline of the human machine and its care. There follows a discussion of the more common diseases arranged by systems, together with sections on child care, emergencies and accidents.

The language is non-technical and the advice given is evidently intended to assist the physician by acquainting prospective patients with some fundamental facts concerning their ailments. The sections dealing with general care of the health, the avoiding of medical fads, quacks, etc., are well expressed.

It is perhaps unfortunate that a newly published work of this kind which deals largely with public work and preventive medicine should not contain any information regarding the prevention of diphtheria by inoculation.

On the whole the book may be considered a useful addition to the literature on household medicine.

C. J. TIDMARSH

Physical Examination and Diagnostic Anatomy. Charles B. Slade, M.D. Fourth edition. 196 pages, illustrated. Price $2.00. London & Philadelphia, W. B. Saunders Co. Toronto, McAinsh and Co., 1929.

This book is especially designed for students. Unlike most books of the kind it deals with the normal. It is an excellent preparation for a study of the more exhaustive works on the subject. The number of editions and reprints is an indication of its popularity. It is meant to be studied. There is no short road to learning the facts and technique of physical examination. The author has marshalled his facts and presented them clearly, in a natural order. The physics of sound is described simply and in a way that impresses the reader. The anatomical side of physical examination does not cover more ground than is required by the subject. Inspection is given the important place it deserves in all examinations. A chapter on Blood Pressure deals with this subject thoroughly. Pulmonary tuberculosis has a special chapter, dealing with its physical signs.

The book may be recommended to all who desire a concise exposition of the subject.

T. W. WALKER

Treatment of Common Disorders of Digestion. John L. Kantor, Ph.D., M.D. Second edition. 287 pages, illustrated. Price $6.50. St. Louis, C. V. Mosby Co. Toronto, McAinsh & Co., 1929.

The second edition of this excellent book contains three new chapters. Valuable material has been added to the chapters of the first edition, with many new illustrations. The chapter sequence has been rearranged.

The book is what is purports to be, a handbook. It is practical, concise and clear. The matter of a subject is not hidden in useless verbiage. The busy practitioner may find sane advice easily. Although the book is not large, details of treatment are not slighted. The illustrations illuminate the text.

It is, perhaps, not fair to select any portion of the book for particular praise. Special mention, however, may be made of the chapters dealing with Gastric and Duodenal Ulcer; the Treatment of Gastric Hæmorrhage; the Anomalies of the Colon; Constipation and Diarrhœa; and Headache. The author has approached these topics in a conservative and logical manner and offers much that is bound to be helpful in the treatment of the patient.

The book is a desirable acquisition to any medical library and will be of particular value to the man who has not the advantages of a connection with a large hospital or clinic.

T. W. WALKER

Origin of Malignant Tumours. Theodor Boveri, translated by Marcella Boveri. 119 pages. Price $2.50. The Williams and Wilkins Co., Baltimore, 1929.

Madame Marcella Boveri has made available to the English-speaking world a most important paper by

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her husband, the late Professor Boveri, of the University of Wurzburg, which presents the possible bearing of his profound studies of distorted nuclei on the cancer problem. Boveri was a master in the field of cytology. In approaching the problem of the origin of malignant tumours, he assumes that the qualities of the malignant cells have their origin in a defect which exists within them, not in a disturbance of protoplasm, but in a disturbance of the nucleus which prevents the return of the cell to the normal condition. Further, he affirms that "such nuclear defects might pass as harmless, if, as was formerly believed, all chromosomes of the nucleus were essentially of the same value." The essence of his theory is that the cause lies not in abnormal mitosis, but in a definite abnormal chromosome complex. The theory is advanced and supported by years of careful investigation.

The translation of this classic in cancer research, and its publication as a very attractive small book of one hundred and nineteen pages, render it readily available to English-speaking physicians and students. It is stimulating alike to the research worker and the practitioner, and will be read with real interest and profit by everyone who is interested in the cancer problem.

R. D. DEFRIES

Clinical Electrocardiograms. Frederick A. Willius, M.D. 219 pages, 368 illustrations. Price $8.00. London & Philadelphia, W. B. Saunders Co. Toronto, McAinsh & Co., 1929.

This is a practical handbook of electrocardiography for students and clinicians who would like to begin the study of this subject. Electrocardiograms illustrating abnormalities of cardiac rhythm and conduction are arranged in orderly fashion and described in a didactic manner. More than half of the 219 pages are occupied by reproduction of electrocardiograms; there are many pages of bibliography; and the remaining relatively small space is devoted to the text. In reading the book one imagines the author, seated in his laboratory, demonstrating to a clinician interested in the given case, but ignorant of electrocardiography, the points to be noted in the record and their clinical significance. Inasmuch as the author has adhered to the principle of brevity, the book is very good, but frequently one meets deficiencies that might have been made good by the addition of but a single sentence or phrase to a given paragraph or page. Thus in discussing sinus arrhythmia the sentence "A slight acceleration of rate occurs during inspiration and a slight retardation during expiration," would be made more comprehensive if to it were added "*or vice versa*". The few sentences devoted to the description of circus movement are very effective, but a simple diagram would help the beginner very much in appreciating their meaning. In the text on premature contractions there are two sentences which might sometimes fail to be in agreement with direct observations. "The beat which occurs prematurely is always followed by a pause, variable in length, which endures until the occurrence of the next beat of the normal cardiac rhythm. This period is known as the compensatory pause." For the usual ventricular premature contractions this is true, but after interpolated beats and in many instances following auricular premature contractions there is no "compensatory" pause, the diastolic period being abbreviated in the former instance and of normal shortened or slightly increased duration in the latter.

The statistical table in which the author analyzes the clinical significance of changes in the T-wave are very interesting and valuable. The records of the five cases of coronary thrombosis shown in chapter XV are very instructive, and those of the dying human heart in the final chapter help to visualize the phenomena which physicians usually observe with the stethoscope. In virtue of the excellent electrocardiograms and the simple directness of the text this book is very suitably adapted to serve its purpose. H. N. SEGALL

Old Age and Minor Involution. Aldred Scott Warthin, Ph.D., M.D., LL.D. 200 pages, 29 illustrations. Price $3.00. Paul B. Hoeber, New York, 1929.

This latest volume on "Old Age", that familiar subject of curiosity and study, is from the pen of one of America's leading pathologists. The great interest aroused by Dr. Warthin's lecture on the "Pathology of the Aging Process" in 1928, led to the writing of this book. The author has had thirty-eight years of experience as a pathologist yet he has seen not more than twenty cases of death due to senility *per se*. Nevertheless the main theme of his treatise is that old age is a physiological phase of the span of life, and not a disease as some have claimed. The argument is lucidly developed.

Our present knowledge of the development of animal organisms makes it apparent that processes of involution are as necessary as those of growth in the "building plan" of the animal. The involution and disappearance of the tail of the spermatozoon, after it has fulfilled its function as the organ of locomotion for nucleus which fuses with the ovum, is one of the earliest involutions in the development of the animal. Then, during embryonic life, the appearance and disappearance of such organs as the gill-slits, the thyroglossal duct, the Wolffian body, and others that are completely enumerated are further examples of evolution and of involution going on simultaneously within the body. The author applies the name "Minor involutions" to these and others which occur during the phases of development from the germinal period to early adult life. Old age he terms the "Major involution."

The time of onset of old age varies widely in different individuals. With a natural proclivity for detailed description, the author enumerates the many changes in the appearance and behaviour of human beings which characterize old age. Two chapters are devoted to the description of histological changes in the tissues that typify the processes of the major involution. Another chapter deals with the diseases which usually occur during old age; carcinoma, though it is one of these, is not necessarily due to an involutionary process, but is considered to be dependent upon a "pathologic anomaly of constitution."

In discussing the various theories and conceptions of the mechanism of involution in old age, the author commits himself to the belief that "old age, the major involution, is due primarily to the gradually weakening energy charge set in action by the moment of fertilization and is dependent upon the potential fulfillment of function by the organism. The immortality of the germplasm rests upon the renewal of this energy charge, from generation to generation." In these two sentences Dr. Warthin epitomizes his conception of old age. The limit of time allotted to the human being is about one hundred years, and although some exceptional cases of longevity have been recorded, Dr. Warthin firmly believes that there are no grounds for hoping that this limit may be greatly extended. The expectation of life may be increased beyond its present average of 54.05 years for white males and 56.41 for white females, but that is another matter. Rejuvenation of the senile individual, in the sense of certain contemporary claims, is not possible. Old age is inevitable, but it can be made a relatively comfortable and happy phase of life. Intellectual functions continue to be satisfactorily active after the physical strength of the body has reached a rather low level. By cultivating intellectual hobbies one may find happiness during senescence and senility. The concluding chapter on the "Philosophy of Old Age," contains much good advice on the art of growing old gracefully. H. N. SEGALL